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ORIGINAL COMMUNICATIONS.

A NEW DEVICE FOR THE HYDROSTATIC DILATATION OF THE CERVIX.

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Hydrostatic dilatation of the cervix refers to the expansion of the cervical canal by means of water pressure, in order to artificially produce a passage large enough to accommodate the fetal body. While of some use in the more advanced stages of induced abortion, hydrostatic dilatation has its greatest field in the induction of premature labor where an attempt is made to save both mother and child, as in cases of pelvic deformities, placental diseases, eclampsia, habitual death of the fetus, habitual large-headed fetus. The perfection of the Cæsarian section, symphysiotomy, and pubiotomy has decreased its field to some extent, but it is still a most important factor in premature delivery.

In somewhat less than a hundred years the mechanics of the process have advanced from the most inefficient attempt, to an exact knowledge and expert control of both the amount of dilatation and of the force necessary to accomplish it. In 1831 von Schnakenberg first conceived the idea of dilating the cervix by means of bags. He used an animal bladder for the purpose, most probably a pig's bladder. This was followed in 1839 by the use of pig and cow bladders as tampons and vaginal dilators, which later gave to Karl Braun the idea for his colpeurynter, a vulcanized rubber bag connected with a tube through which, after its insertion into the vagina, the bag was filled with water. At a still later period this same bag was used by Braun as a metroryn-ter, or uterine dilator. Tarnier in 186? came forward with his supracervical idea, when he advocated inserting an empty gutta-percha sphere into the lower uterine segment and filling it by means of a tube connecting it with the exterior. After full distention of the bag the tube was tied off and the instrument allowed to remain in position until strong pains were excited. Mäurer increased the efficiency of this instrument by pulling on the tube from time to time, thus simulating the bearing-down pains of labor.

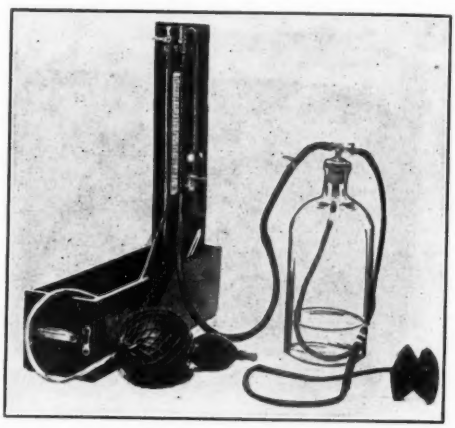
In this same year, 186?, Barnes came out with his cervical idea, which is the basis of the modern method. The purpose of Barnes's bag is to dilate and obliterate the cervix as opposed to the earlier ideas of dilating the vagina or the lower uterine segment. The bags come in three sizes. They are fiddle-shaped, with a concave top in which the head globe is supposed to rest. The sides of the bag are somewhat concave, so that they may be embraced by the cervix and prevented from slipping out or in. While Barnes's bags are still used somewhat in Great Britain and her colonies, they have fallen into disuse in the rest of the world owing to the fact that they cannot be prevented from slipping out of position just as soon as the cervix is dilated beyond the point of gripping them firmly.

The next hydrostatic dilator appeared in December, 1888, when Champetier de Ribes modified the balloon bag of Tarnier, which

did not pretend to dilate the cervix, into an elongated cone, which would dilate the cervix as it was gradually removed. He also improved the tissue of the bag, making it of silk covered with rubber, thus producing an impermeable and inelastic surface. A standard Champetier de Ribes bag is 8 centimeters in diameter at the base, with a capacity of about 17 ounces, and is much more powerful than the Barnes or the Tarnier bag, but is open to the objection that it may displace the presenting part or may rupture the lower uterine segment. After insertion and distention this bag is pulled on at the periods corresponding to the uterine pains. Thus as the cone is withdrawn the cervix is gradually dilated. This bag has never been popular in the United States because of the above-named objections.

Dr. Voorhees of Brooklyn brought out in the *Medical Record* for September, 1900, an account of a bag which has a wide use in America. This bag is also cone-shaped and comes in graduated sizes, but it is considerably shorter than the Champetier de Ribes bag, approximating an equilateral triangle in cross-section. This obliterates the long neck of the French bag, but still has the objections of causing possible displacement of the fetus, as the whole bag is inserted into the lower uterine segment, or of slipping in or out of position. A few years later, in 1906, in the *Journal of Surgery, Gynecology, and Obstetrics,* Pomeroy offered a bag which is a combination of a Voorhees bag and one the shape of the dilated birth canal. After insertion the internal bag, which corresponds to the Voorhees bag, must first be dilated, and then through a separate tube the vaginal bag is distended with water. This bag is large, bulky, and clumsy. In a great majority of cases it is not necessary to dilate the vagina, and if the bag must remain in position for any time this vaginal dilator causes intense pain to the woman.

In January, 1911, Dr. Barton Cooke Hirst completed a bag which obviates a great many difficulties presented by the earlier ones. In a general way all the bags invented up to this time offer the following objections: they are either too bulky for practical use, or they cannot be prevented from slipping out of position so soon as partial dilatation is accomplished; they offer the great danger of displacing the presenting part, and if traction is applied in order to dilate the cervical canal as the bulky mass descends through it, the cervix will be so elongated as to practically negative what dilatation has accomplished. The fact that the dilatation is caused by the *removal* of the dilator means that unless delivery occurs within a comparatively short time the cervix returns to its former degree of contraction

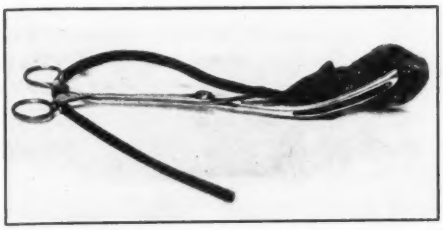


Apparatus for inflation and recording of pressure.

and the time employed has been practically wasted. The Hirst bag attacks the problem from a new standpoint. Its object is to obliterate and dilate the cervix on the theory that with a completely dilated cervix we have the delivery within our control to manage as we see fit.

With this idea in mind—*i.e.,* to dilate and obliterate the cervix—the bags were made of strong non-elastic rubber tissue. They are of a modified hour-glass shape when distended, looking like nothing so much as the ball of a diabolo set. They are made in three sizes, the narrow central neck being one, two, or three inches in diameter, and the expanded bases one inch larger than the neck in each size. The length when dis-

tended is two inches for all the sizes, that being sufficient to include and project slightly beyond the usual cervix. A special series of bags has been made with a half-inch insert in the neck, making the bags two and a half inches long, for use in cases of



Hirst bag ready for introduction.

abnormally long cervices. The tube by which the bag is filled leads off from the center of one base. The bags are inserted with one base just inside the internal os, and the other just external to the external os. Thus when the bag is distended it is firmly locked in place and can slip neither in nor out. The flat non-elastic base in the uterus offers no inducement to displacement of the presenting part, while the main line of pressure is at right angles to the opposed cones—*i.e.*, directly against the embracing cervix. The bag is inserted by rolling it upon itself, grasping it in an Emmet curetting forceps or Champetier de Ribes forceps, well smeared with sterile glycerin, and passed up the cervical canal into position. In those cases in which there has been no dilatation of the cervix it will be necessary to etherize and dilate instrumentally with a two-branch dilator to a diameter of 7 centimeters in order to admit the bag. In the earlier experiments the tube was then attached to a syringe and the bag distended with sterile water. Later Dr. Coover, of Harrisburg, suggested attaching the tube to the hose of a douche pail, thus to some extent regulating the amount of hydrostatic pressure by raising or lowering the pail. Later this was modified again by attaching the tube to one outlet of a bottle of sterile water, the other outlet leading to a graduated mercury manometer as used in the blood-pressure apparatus. Stop-cocks at the various necessary points permit a definite pressure in the bottle of sterile water, which, in turn, forces water under the same pressure into the bag. In this way a certain definite pressure in millimeters of mercury can be obtained in the bag. The tube of the bag may then be clamped with a hemostat and disconnected from the apparatus and the patient put back to bed under a certain definitely known hydrostatic pressure until the desired dilatation is obtained. Readings at different intervals have shown that this pressure is maintained in the bag undisturbed. If one of the smaller bags is used at first a larger bag may later be substituted, the largest, the 3-inch bag, giving almost complete dilatation of the cervix.

The Hirst bag is not bulky, and being

Hirst bag inflated.

fixed at both the internal and external os by the enlarged bases it cannot slip out of position. There is no danger of displacing the presenting part because there is nothing in the uterus except the flat head of the bag, which fits snugly over the internal os. The

great drawback of the elongation of the cervix which must be contended with in all the other bags is completely prevented by the mechanical lines of pressure as well as by the shape of the bag, which tend to obliterate the cervix at the same time the dilatation is being effected. The constant pressure of the bag in the position where force is needed and the ability to regulate pressure will in a short time so exhaust the muscle that after the removal of the bag the cervix will retain its dilatation for a considerable time, a record of forty-eight hours having been noted. From the fact that pressure is exerted at the most advantageous position and in the most desirable direction, and also because the pressure can be raised as desired, the time necessary to accomplish dilatation is halved or even quartered—a most important item in the induction of labor in cases of eclampsia.

There is absolutely no pain caused by the pressure of the bag, the patient not even complaining of discomfort. In fact the bag is so little irritating to the birth canal that in a way it defeats one of its purposes, to start or increase labor pains. To remedy this it may be necessary in some cases to apply Krause's method for induction of labor by passing one or more bougies into the uterus when the bag is first introduced and withdrawing them when the pains become active, as was done in Case 7 below.

A consideration of the following cases will prove the wide application and give some idea of the efficiency of the Hirst bag:

Case 1.—Sady L., aged twenty-eight, primipara. At term. Woman in labor for four days. The cervix obliterated, but not dilated. By manual manipulation cervix dilated to size of a half-dollar. The 2-inch Hirst bag was then inserted at 100 mm. of pressure for ten minutes. It was then removed, and the cervix was found to be completely obliterated and fully dilated. The child was delivered by Simpson forceps in fifteen minutes more, making twenty-five minutes from the time the bag was introduced until delivery of the child.

Case 2.—Sulla P., aged thirty-eight, sixth pregnancy. Patient had never had any trouble with previous pregnancies. Was ten days overdue and had had no pains. No obliteration or dilatation of cervix. The cervix was dilated with the J. C. Hirst modification of the Gau dilator only enough to admit the 2-inch bag. This bag was inserted and left in position at 130 mm. of pressure for two hours and then removed. Cervix was found to be dilated to 2 inches, and shortened from 1½ inches to ½ inch. Patient had one real pain shortly after removal of the bag, but no other. After forty-eight hours this dilatation was still present. A Pomeroy bag was then inserted for three-quarters of an hour. After its removal a greatly overgrown child, presenting by the foot, was delivered by difficult manual manipulation.

Case 3.—Zipporah H., aged twenty-two, second pregnancy. No trouble with previous pregnancy. Patient eleven days overdue and no labor pains. No obliteration or dilatation of cervix. The J. C. Hirst modification of the Gau forceps was used to dilate the cervix to 7 centimeters. The 2-inch Hirst bag was then inserted for two hours at 150 mm. pressure. After its removal the cervix was found to be dilated to 2 inches and shortened to three-fourths of an inch. Labor pains began, and the woman spontaneously delivered herself three hours later.

Case 4.—Mary D., aged thirty-two, primipara. Patient in advanced pulmonary and laryngeal tuberculosis. Three weeks before term the bag was inserted for 2¼ hours at 180 mm. pressure, the cervix having been first dilated to 7 centimeters by the two-branch dilator. No pains for two days after the bag was removed, but the cervix remained dilated during this time. Pain started after forty-eight hours, the woman being delivered in twelve hours more by the Sawyer forceps.

Case 5.—Fanny L., aged eighteen, second pregnancy. Woman at term with three fingers dilatation. A large 3-inch bag was inserted for thirty minutes, at 150 mm. pressure. The patient was delivered ten

minutes after the removal of the bag by the axis traction forceps.

Case 6.—Mary N., aged twenty-six, sixth pregnancy. Woman at term, with breech presentation. After dilating to 7 centimeters with a two-branch dilator a 2-inch bag was inserted for two hours at 150 mm. pressure. After its removal there were no pains for forty-eight hours, although the dilatation of 2 inches persisted. Podalic version was performed, and no pains being excited the patient was allowed out of bed for twenty-four hours, after which pain started and she was delivered spontaneously.

Case 7.—Mary F., aged thirty-six, second pregnancy. Small woman with a contracted pelvis, the true conjugate being only 8¾ centimeters; had had great trouble with previous labor, resorting to bougies for seventy-two hours and a Pomeroy bag for five hours more. In this second labor, after dilating instrumentally to 7 centimeters, the 2-inch Hirst bag was inserted at 180 mm. pressure for eleven hours. Two bougies were also inserted for this time. One and a half hours after the removal of the bag and bougies the 3-inch Hirst was inserted at 180 mm. pressure and allowed to remain in position for 2¾ hours. During this time the pains were frequent and fairly strong. After the removal of this bag the woman was delivered by Simpson forceps.

CONCLUSIONS DRAWN FROM THE STUDY OF THE ABOVE CASES.

The Hirst hydrostatic bag is superior to any of its predecessors for the following reasons:

1. It causes no pain.
2. The cervix is obliterated and not elongated.
3. There is no danger of displacement.
4. The dilatation is more than transitory.
5. The bag cannot slip out of place.
6. The amount of hydrostatic pressure can be increased as desired.

In conclusion I wish to thank Dr. B. C. Hirst, Dr. Coover, and Dr. Joseph Cook for their interest and assistance in the preparation of this paper.

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THE ACTION OF ANIMAL EXTRACTS UPON THE SECRETION OF THE MAMMARY GLAND.

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Röhrig, Strumpf, Hammerbacher, and Cornevin sought to excite the milk secretion by chemical agents, as pilocarpine.

Foges (*Centralblatt für Physiologie*, Bd. 19, S. 233, 1905) found that the development of the mammary gland depended upon the presence of functionally active ovaries, but that the production of milk was dependent on the abrogation of the ovary.

Knauer found that upon removal of the ovaries the mammary gland atrophied, but by subsequent transplantation remained the same.

L. Fraenkel thought that the internal secretion of the corpus luteum had a certain influence upon lactation.

Marshall thought the cause of the excitation of the milk secretion resided in the changes of the uterine mucous membrane during pregnancy.

Starling and Jane Lane Claypon (*Proceedings of the Royal Society of London*, 1909, Bd. 77) injected subcutaneously into rabbits extract of the embryo of rabbits. These injections were repeated at short intervals. They found it caused an enlarge-

ment of the mammary gland and produced a secretion of milk. Extracts from the uterine mucous membrane, ovaries, and placenta were without effect. They believed that a hormone was generated in the embryo, and through the placenta passed into the blood and then to the gland.

Karl Basch used saline extracts subcutaneously of human or homologous placenta. These extracts were repeatedly injected. By dogs, cats, rabbits, guinea-pigs, and goats he obtained a secretion of milk independent of pregnancy. Basch found, by injection of extract of the fetus of the rabbit and of the dog, in rabbits a secretion of milk. It was less in quantity than that obtained by injection of extracts of placenta (*Monatsch. f. Kinderheilk.*, 1909).

Lederer and Pribram (*Pflüger's Archiv für Physiologie*, Band 144, Heft. 9 and 10, p. 591) made a series of experiments upon goats. They inserted a cannula into the nipple and counted the amount of milk excreted. An aspirating bottle was attached to the cannula. They injected into the vein of the goat fresh placental extracts and obtained a marked increase of the milk secretion. They also state that probably ovarian extract is without effect. Surely liver extract has no action in accelerating the secretion of milk.

Foa confirmed the statement of Starling and Lane Claypon. He studied the influence of extracts of the fetus of the cow upon young rabbits, and found fresh extracts caused a marked increase of the parenchyma of the mammary gland with the formation of new acini, whilst boiled extracts were without effect.

Arthur Biedl and Königstein (*Zeitschrift für Experimentelle Pathologie und Therapie*, Achter Band, Zwölftes Heft, p. 358) found that the intraperitoneal injection of fetal and placental extracts was followed by perceptible appearances in the milk gland. They also used intraperitoneal implantation of the placenta or embryo, so that the chemical messenger, the hormone, could be continuously supplied to the organism as in the natural state of affairs. The embryo and placenta were obtained by Cæsarian section from rabbits in the second half of pregnancy. This method was not productive of any effect upon the mammary gland secretion.

Much safer was the histological observation of the mammary gland. The animals with placenta implanted showed no development of the mammary gland tissue. But in all animals with the embryo implanted there was more or less development of the gland. These changes, as a rule, were more marked when more extract or more implantation material was used. They found the injection method to produce greater hypertrophy than the implantation intraperitoneally. Injections of the fetal extract cause hypertrophy of the breast in castrated females.

Biedl and Königstein state that although the placenta physiologically excites a secretion of milk, yet the true source of it is in the fetus and not in the placenta.

Ott and Scott at the meeting of the Society for Experimental Biology and Medicine, December 21, 1910, announced that the corpus luteum by the vein in the goat increased the quantity of milk fourfold in five minutes.

Ancel and Bouin (*Journal de Physiologie et de Pathologie Générale*, No. 1, Jan. 15, 1911, p. 31) have made researches upon the functions of the corpus luteum in gestation. They used rabbits. They produced a follicular rupture and the apparition of the corpus luteum in a certain number of rabbits either by coition or by rendering them more sterile for a long time by ligature of the spermatic canals. The animals were killed at different periods after the sexual act, and their mammary glands examined microscopically and macroscopically. They also examined the mammary glands in rabbits during the period before puberty and during the first period of "heat." They also used rabbits which were pregnant, and thus made a comparison between the development of the mammary gland in normal conditions and the state of the gland only under the influence of the corpus luteum. They

also destroyed with the fine point of the cautery all the corpora lutea at various times after their appearance, and found that the mammary glands did not develop or their development was arrested.

They show that the corpus luteum exercises a kinetic stimulation upon the constituent elements of the mammary gland. As to the secretory phase following this form of development, the cause is to be sought not in the corpus luteum but in one of the other factors which appear in the course of gestation.

Our experiments were made upon goats. They were bound down, not etherized, and the plan of Röhrig followed. An oiled metal cannula was inserted into the nipple and the milk aspirated into a graduated flask. A water aspirator was used. The goat was in the nursing period, and activity of secretion was maintained by means of the young nursling. The amount of milk was noted every five minutes. The animal extracts were rubbed up in a mortar with distilled water, filtered through cotton, and injected into a vein in the ear or into a vein in the leg. For three five-minute periods the amount of milk was noted. After this time the animal extracts were injected and the amount of milk again noted every five minutes. The following experiment shows the effect of infundibulin:

Experiment 1.—Goat, right nipple.

2:25	P.M.		
2:30	"	4 drops of milk.	
2:35	"	5 " " "	
2:40	"	5 " " "	
2:41	"	5 drops of infundibulin by the vein.	
2:45	"	405 drops of milk.	
2:50	"	15 " " "	
2:55	"	22 " " "	
3:00	"	12 " " "	
3:05	"	8 " " "	
3:10	"	4 " " "	
3:11	"	5 drops of infundibulin by the vein.	
3:15	"	75 drops of milk.	
3:20	"	15 " " "	
3:25	"	15 " " "	
3:30	"	7 " " "	
3:35	"	6 " " "	
3:40	"	5 " " "	
3:45	"	4 " " "	

Infundibulin starts the flow in about one minute from the beginning of the injection, and it reaches its height in four minutes, after which it rapidly falls to normal. When a feverish condition arose in the goat, infundibulin acted very feebly.

We also found the corpus luteum (10 grains), pineal body (5 grains), and the thymus (1 grain) increased the quantity of milk fourfold in five minutes. The ovary minus the corpus luteum had no effect. The amount of butter-fat was about the same in the augmented secretion by the thymus, corpus luteum, and infundibulin. The determinations were made with the Soxhlet apparatus. Boiled thymus had no activity upon the secretion of milk.

About fifty experiments were performed. Appended are a few of them:

Experiment 2.—Goat.

2:55	P.M.		
3:00	"	8 drops of milk.	
3:05	"	7 " " "	
3:10	"	7 " " "	1 grain of thymus.
3:15	"	112 " " "	
3:20	"	44 " " "	
3:25	"	20 " " "	
3:30	"	14 " " "	
3:35	"	6 " " "	

Experiment 3.—Goat.

3:05	P.M.		
3:10	"	4 drops of milk.	
3:15	"	3 " " "	
3:20	"	3 " " "	
3:25	"	5 " " "	10 grains of corpus luteum.
3:30	"	65 " " "	
3:35	"	12 " " "	
3:40	"	3 " " "	

Experiment 4.—Goat.

2:50	P.M.		
2:55	"	4 drops of milk.	
3:00	"	3 " " "	
3:05	"	4 " " "	
3:10	"	4 " " "	
3:15	"	3 " " "	1 grain of pineal gland.
3:20	"	3 " " "	
3:25	"	2 " " "	
3:30	"	2 " " "	
3:35	"	0 " " "	
3:40	"	1 " " "	5 grains of pineal gland.
3:45	"	63 " " "	
3:50	"	27 " " "	
3:55	"	6 " " "	

P. S.—Schäfer and Mackenzie have confirmed the action of infundibulin and of corpus luteum on the milk secretion (Proceedings of The Royal Society, Vol. 84, No. B 568, July 3, 1911, page 16).

ADENOIDS: INDICATIONS FOR THEIR REMOVAL—THE OPERATION OF ADENECTOMY, AND LIABILITY OF RECURRENCE.

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The collection of lymphoid tissue in the nasopharynx is variously spoken of as adenoids, the adenoid mass, the pharyngeal tonsil, and Luscha's tonsil, taking the latter name from the German anatomist Luscha, who first particularly studied and described it. The adenoid mass, the faucial tonsils, and the lingual tonsil at the base of the tongue, make up the so-called lymphoid ring or triangle of Waldeyer, which more or less completely encircles the entrance of the pharynx. The structures making up this ring are all normally present in some degree in childhood, and all tend to atrophy in adult life. Hypertrophy of one of these lymphoid groups is usually accompanied by enlargement of, or pathologic changes in, the others in varying degree. In this paper attention will be directed to the pharyngeal tonsil alone.

Pathologically, adenoid overgrowth may be divided, according to Kyle, into four varieties: First, a soft diffuse friable mass composed mostly of lymphoid tissue and covered by a thin layer of epithelium. Second, an edematous or cyanotic form in which glandular tissue is but slightly increased, the enlargement resulting from venous stasis and edema. Third, a hard variety in which there is decided increase in both connective tissue and lymphoid elements. Fourth, also a hard form caused by repeated attacks of acute or subacute inflammation, followed by organization of connective tissue. This last form is usually secondary to intranasal disease. For practical purposes a division into two classes, soft and hard, meets the clinical aspects presented. The hard forms give somewhat uniform symptoms at all times, while in the soft forms obstruction to respiration is greater with the swelling of each succeeding cold and is always worse at night, owing to the venous stasis and engorgement consequent upon the recumbent posture and relaxation of sleep.

Dampness, bad air, and poor sanitary conditions predispose to adenoid hypertrophy. The uncertain and quick-changing atmospheric conditions of a climate such as found in Philadelphia seem particularly to favor it. In a family of several children it is unusual to find one child only affected, several or all being likely to present the same condition. Whether this is because of an inherited predisposition or simply because of similar environment is uncertain.

The symptoms of adenoid hypertrophy run through a wide range, depending on the character and amount of the growth, its position in the nasopharynx, and the size of the pharyngeal vault. A capacious vault may carry a good-sized adenoid mass, adventitiously placed, without symptoms warranting surgical interference, while in a small pharynx slight adenoid hypertrophy may cause marked obstructive symptoms. The typical adenoid picture is well known—the open mouth, high-arched, narrow palate, irregular and projecting upper teeth, small, poorly developed nares, and staring, vacant expression. There is also a peculiar voice quality, sometimes designated the "dead voice," due to lack of nasal resonance. Inability to concentrate thought and attention is present and is termed aprosexia. This condition is due partly to imperfect hearing and partly to disturbed cerebral circulation.

In children with partial obstruction the symptoms are less pronounced. Nasal respiration may be free during the day, but with the turgescence of the recumbent posture and relaxation of sleep a noisy, snoring respiration develops. Acute colds in the head are common, or a chronic rhinitis with mucopurulent discharge is present, with more or less excoriation or eczema of the anterior nares and upper lip. Earache and

nosebleed are frequent. Gastric and intestinal disturbances are not unusual.

The diagnosis of adenoid hypertrophy can often be made at a glance, yet it is well to make a careful examination in each case. With the nasal speculum and reflected light any pathologic condition within the nares as a source of obstruction may be eliminated. In tractable patients the diagnosis may be made by inspection with the rhinoscopic mirror, but the view obtained does not give an accurate idea of the amount of hypertrophy present. Digital examination gives more exact information and is quickly and easily accomplished. If the right forefinger is used it is well to stand behind and to the right of the patient, and with the thumb of the left hand force the patient's cheek between his jaws, thus protecting the examiner's finger from wounds by sharp teeth. The impression conveyed by the sense of touch may be that of the time-honored "mass of earthworms," or it may be that of a soft, broad, cushion-like mass.

The removal of adenoids is accomplished in various ways, depending greatly upon the ideas of the operator. Thorough removal is essential to the success of this operation, and as the class of patients with which we have to deal is as a rule intractable, general anesthesia is necessary. Operators differ in their choice of anesthetics, but as these patients are peculiarly susceptible to anesthetic dangers they should be subjected to the least possible risk, and the writer is satisfied to use only that tried and most reliable of anesthetics, namely, ether.

Numerous instruments for this operation have been devised, among which may be mentioned curettes of various patterns, used both through the nose and by way of the pharynx, crushing forceps, punches, and adenotomes working on the principle of the tonsillotome. Probably the most useful instrument of all is the Gottstein curette or one of its modifications. Whatever the instrument used the lymphoid hypertrophy should be thoroughly removed. It is easy to make a few sweeps with the curette, produce a good deal of bleeding, and say "the adenoids are out," but this is not adenectomy as it should be done. As this operation is one of the few that must be done without the aid of the sense of sight, examination should be made by the finger before the curette is used, in order to locate the tissue to be removed, and the operation should not be considered complete until the examining finger finds the nasopharynx clear. The region surrounding the upper margins of the choanæ, the posterior openings into the nares, needs particular attention, and lymphatic tissue in this locality should be curetted away by means of the ring curette passed through the nose, or it may be satisfactorily done by the finger alone. The fossæ of Rosenmuller, lying between the Eustachian orifices and the posterior wall of the pharynx, are also important points, as lymphatic tissue here, or trabeculæ of connective tissue, interfere with the mobility and patulency of the Eustachian tubes and tend to deficient drainage, rarefaction of air in the middle ear, and consequent tinnitus, deafness, or infection. Bleeding is usually very free for a few minutes, but soon ceases, and, in patients not hemophiliacs, rarely necessitates measures for its control. Some care should be exercised in the use of instruments in the nasopharynx. The Eustachian cushions may be injured by forcing the curette too far to one side, while the soft palate, uvula, or edge of the vomer may be caught and nicked by the forceps. The curette does not always cut the adenoid mass free at its lower margin, and in efforts to complete the removal more of the mucous membrane of the posterior wall of the pharynx than is necessary may be torn loose. These accidents are not serious, but are as well avoided. Aspiration of blood, mucus, and pieces of membrane is avoided by operating with the patient's head lower than his body, gravity thereby tending to keep the larynx free; not too profound anesthesia is also a safeguard in this respect.

The end results of the removal of adenoids, combined with tonsillectomy when the latter is also indicated, are invariably

good. The relief from obstructive symptoms is usually immediate, and improvement in the general health is soon apparent. In some instances mouth-breathing will continue after the obstruction is removed, and it is necessary in such cases to teach proper breathing, sometimes even binding up the chin at night so that a correct habit may be formed.

It is difficult to form conclusions concerning the liability of recurrence, as statistics are not recorded. Undoubtedly cases do occur, but the experience of Coakley, who operated on the same child three times in three successive years, is certainly unusual and shows a marked tendency to lymphatic growth in some instances. From experience gained in striving to do this little operation well, one learns how easy it is to do an incomplete removal, and we believe, with Wright, that many cases of recurring adenoids are really not regrowths at all, but are rather evidence of poor technique in the first operation.

A better attention to detail in the operation itself and a little more care that the habit of nasal breathing is formed after the obstruction is removed, will, we believe, surprisingly decrease the frequency of recurrence, and the more uniformly good results obtained will enhance the value of the removal of adenoids in the eyes of both the profession and public.

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THE DYSPEPSIA OF HEART DISEASE AND ITS DIETETIC TREATMENT.[1]

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Until there is some cardiac insufficiency the function of the stomach is only slightly disturbed. In compensated heart cases the acidity of the stomach seems to depend upon the temperament of the individual rather than any influence exerted by the heart. When the heart commences to weaken the portal system engorges correspondingly and the digestive tract thereby suffers. The post-mortem findings of the stomach from cardiac failure are as follows:

The walls are thickened and the inner surface is purple and covered with tenacious mucus, the rugæ are increased in size and the mucous membrane is studded with small hemorrhages. Occasionally may be seen antemortem digestion of these infiltrated areas, which gives rise to ulcers. This is the end picture of a progressive gastric incapacity. In the course of this progressive disturbance we could expect various grades of digestive disability. Soon after the engorgement a catarrhal condition supervenes, and then we have symptoms of indigestion. The acidity usually declines with the aggravation of the second condition. In advanced cases the motility of the stomach is impaired, its absorption limited, and stagnation of food occurs. Under these circumstances we have fermentation and the formation of a diacetic acid, the presence of which denotes the advance of anorexia and gastric intolerance.

There is a diminished power of absorption of fats in heart disease due to high venous pressure, preventing the thoracic duct from emptying itself, and it has been shown that a high portal pressure causes the lymphatics of the intestines to collapse. The engorgement of the veins may result in hemorrhage with hematemesis.

In cases of ruptured compensation the patient usually has a feeling of oppression in the chest and flatulence after meals, which becomes more severe as the heart undergoes dilatation. In excessive distention of the stomach and intestines the heart is displaced upward and horizontally, which causes faintness and even fatal syncope. There may be violent palpitation after meals, and with it giddiness and irregularity of the pulse. In advanced cases the appetite is lost and there is a loathing of food. As we might imagine, these symptoms are an omen of the not far distant end, as it

[1] Read before the North Carolina Medical Society, June 23, 1911.

means starvation, which adds to the difficulty of the already failing heart. Vomiting may be present in severe cases. Giddiness and insomnia usually occur in these. The stools may contain an excess of fat. Pain in the region of the liver usually occurs as the result of failing compensation, and that organ becomes somewhat enlarged. There may also be abdominal pain from sclerosis of the gastric and mesenteric arteries. Catarrhal jaundice may also accompany the failure of the heart. It is usually very slight. The presence of it always indicates cardiac insufficiency.

Hirschfelder[1] says: "Rest for the gastro-intestinal tract is quite as important for the heart as for the muscles." It is well determined that the pulse-rate and pulse-pressure become increased and the heart directly influenced after meals. When compensation is complete, the diet need be regulated only by the general rules. Since purin bodies and tea, coffee, and alcohol raise the blood-pressure, they must be limited in use if given at all. An interval of at least five hours should be allowed between meals in order to give the stomach time to empty itself. Especially is this desirable in cases of impaired motility when stagnation is evidenced by flatulency and dyspnea. The principal meal should be at midday and the lightest at evening. Such indigestible food as the following must not be taken: Rich soups or chowders, veal, pork, stews, turkey, gravies, fried foods, liver, kidney; potted, corned, or cured meats; salted, smoked, or preserved fish; goose, duck, sausage, crabs, lobster, salmon, pies, pastry, candies, ice cream, cheese, nuts, ice water, malt, or spirituous liquors.

The quantity of liquid should be restricted to some extent because an excess of it distends the vessels and raises the arterial tension. As a rule liquids must be decreased in proportion to the decrease in quantity of urine. At the same time it must be borne in mind that enough liquid must be allowed in order to carry off the impure, irritating end-products which are harmful to the blood. Since the distention of the stomach may cause mechanical embarrassment, it is necessary that the meals never be heavy, and should be made up of the foods which are least likely to ferment, such as milk, eggs, toast, zwieback, and the various cereals. If the patient becomes worse the diet must be further restricted, and should anasarca supervene one may advocate a diet of but 800 Cc. of milk in twenty-four hours, or make use of a dry diet. Generally speaking, where there is an edema, the liquids must be limited to 1500 Cc. Several men of authority find that the reduction of salt will be followed by a decrease in the edema. All authors restrict or forbid the use of tobacco, and most of them forbid tea and coffee excepting in very small amounts. In regard to the use of alcoholic beverages, the best of medical authority and experience is against their use.

Friedenwald[2] has this to say: "If owing to the general weakness of the patient the use of alcohol is indicated, it should be given in small quantities and in the form of whisky or brandy well diluted; wine and beer are contraindicated." Hirschfelder[3] states: "It is a safe rule that in persons not already addicted to its use, brandy or whisky should be given in doses which serve as carminatives, and not in doses intended for stimulation. Alcohol should be reserved for crises when the stimulation of every fiber is all-important. On the other hand, alcohol should never be withdrawn suddenly from persons addicted to its use."

In consideration of the rôle which high blood-pressure may play in heart disease, we will add its dietetic treatment separately. It may be best given after the plan of George Oliver,[4] which is as follows: The cardinal aims are (*a*) to reduce the bulk and number of meals; (*b*) to exclude or lessen red meats, especially when roasted, and to avoid meat extractives, such as soups and gravies; (*c*) to give freely vegetable-derived foods (fruits, green vegetables, and farinacea) and the non-nitrogenous articles of diet. Butcher's meat is injurious in three possible ways: first, the cardiovascular stimulation from the extractives; secondly, increased intestinal putrefaction; thirdly, the

increase in nitrogen produces toxemia. Boiled meats are preferable because boiling removes the extractives. Salt taken above 100 grains a day is a circulatory stimulant and increases the lymph flow, with resulting concentration of the blood. This increases its viscosity, and in that manner arterial blood-pressure is raised.

It is often advisable when the blood-pressure is high to give a salt-free diet for a fortnight. This consists of vegetables, fruits, nuts, fats (fresh butter and cream), salt-free bread, farinacea (potatoes, rice, peas), and sugar. A pure milk diet of five or six pints daily is often very useful in high pressure. Buttermilk made from skimmed milk may be an improvement over either pure or skimmed milk. Coffee, tea, and alcohol should be limited and in certain cases excluded. Tobacco must be given up. Should flatulence and dyspepsia intervene, certain modifications or combinations of the above must be given.

To summarize: The dietetic treatment of heart disease is based upon the following pathological factors:

1. Impairment of the portal circulation with its consequent digestive disturbances.
2. Diminished absorption of fats.
3. Reduced motor function of the stomach and intestines with food stagnation, fermentation, anorexia, and finally gastric intolerance.
4. High blood-pressure in certain cases.
5. Viscosity of blood.

It is possible, as has been briefly outlined in this paper, to allow a diet which gives the greatest nutrition to the patient with least possible tax upon his system. By recognizing the heretofore named factors and by carefully adapting the suitable food, we are justified, in conclusion, in saying that there is a scientific selection of food in heart disease which should always be followed.

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NOTES ON THE ABSORPTION OF IRON

On this important subject MUNRO writes in the *British Medical Journal* of July 15, 1911. After citing several cases he says that the results of his treatment would seem to show that small doses of the organic preparations of iron, as tested against equal doses of the commonly used inorganic salts of iron, are absorbed in much greater proportion to the total given per diem.

The giving of very large doses of the ordinary salts of iron, judged by these results, would seem to be quite unnecessary, and may even prove injurious. The iron taken into the system, so far as we know, passes by way of the duodenum to the lymph channels and thence to the blood stream. It is then deposited first in the spleen and later on in the liver. There it is temporarily stored, and the excess is then excreted by the epithelial cells of the colon and the cecum. There is no proof that the organism can make any immediate use of the excessive doses of the inorganic preparations of iron sometimes administered.

Further, it has been estimated that the average total iron in the human body is only about 2.5 to 3 grammes, a quantity barely sufficient to make a small nail. The greater proportion of this, too, is in the form of hemoglobin. The average content of food iron on a mixed dietary, indeed, is, according to Herter, not more than one-twelfth to one-sixth of a grain, and this small quantity suffices to maintain the iron equilibrium. These facts taken together appear to greatly strengthen the argument for the administration of iron, preferably in some such form as that used by the author which he calls Preparation A, in which the iron is in combination with vegetable albumen, and in small enough doses to be efficient without disturbing digestion.

These few cases are not sufficient to justify final conclusions, but at all events they encourage one to proceed with the investigation on similar lines, in order, if possible, to find some means of obtaining the greatest benefit from one of the most valuable, but often most abused, remedies in the Pharmacopœia.

EDITORIAL.

POSTOPERATIVE LUNG COMPLICATION.

Those practitioners who have been strong advocates of the employment of chloroform as a surgical anesthetic, although they have been forced to admit that it more frequently produces serious accidents on the operating-table than ether, have, nevertheless, claimed that if subsequent complications were considered, ether would be found the more disadvantageous drug of the two. There can be no doubt that this claim is to some extent true, since ether rarely, if ever, when properly administered, can be held directly responsible for death during an operation, but is prone to cause some irritation of the respiratory tract which, during convalescence from the operation, may be an annoying or dangerous symptom. Within the last few years surgeons have recognized more and more that many of the disagreeable effects after ether are due to its administration by persons lacking in experience, who give the vapor in too concentrated form and who saturate the patient with the drug instead of giving it in what might be called a "medicinal dose." In other words, at a time in the near past, many patients were almost poisoned by ether instead of being medicated by this drug.

Growing statistics, compiled with care and in some rare instances controlled by autopsy findings, have proved, however, that ether, properly given, is an extremely safe drug, both as to near and remote effects, and attention is called to this matter by an interesting address given by Pasteur, physician to the Middlesex Hospital, London, and published in the *Lancet* of May 20, 1911. In the early part of his address he utters a protest against the common practice on the part of surgeons of waiting until the pulmonary lesions after operation have become exceedingly severe before they call to their aid medical colleagues. In other words, it not infrequently happens that the medical man is asked to see a postoperative pneumonia when the condition is so grave that death is unavoidable. Again, he points out that pulmonary complications are not due to the ether so much as they are due to the area of operative procedure, and he calls attention to the well-known fact that such a sequence is particularly prone to follow abdominal surgery. He also emphasizes the point, to which we have already called attention, that postoperative complications in general are diminishing in frequency, and that this diminution is, in part, due to care in the use of the anesthetic and the recognition of the fact that cleanliness of the mouth is an essential preanesthetic condition.

The statistics that he advances, moreover, to indicate that ether is not really responsible for pulmonary lesions are very interesting. He emphasizes the fact, to which we called attention many years ago in the editorial pages of the GAZETTE, that grave operations should be preceded by careful cleansing of the mouth and postnasal spaces, if possible, for a number of days before the anesthetic is given. It is remarkable that pulmonary infection does not occur more frequently because of septic conditions in the mouth, since the anesthetic benumbs or puts aside the glottic reflexes and so permits the inspiration of mucus and saliva which are always more or less infected. While it is true that the ether vapor is capable of causing some irritation of the respiratory tract, there is every reason to believe that in an ordinary individual this irritation is not severe enough to be responsible for lesions unless infection is present. Pasteur also believes that the disturbance of respiratory rhythm during anesthesia is more responsible for pulmonary complications than the anesthetic itself, since violent or stormy respirations naturally draw into the lung materials from the mouth and upper respiratory tract.

In regard to the development of the physical signs of pneumonia after the use of ether, Pasteur expresses the opinion that in many instances these signs are not indica-

tive of true consolidation of the lungs, but are due to collapse of the pulmonary tissue, and in some instances he thinks that massive collapse takes place. Thus, out of 100 cases, there were 68 of pneumonia and 32 of massive collapse, some of which, however, were primarily considered as pneumonia. Deflation of the lung, as Pasteur points out, predisposes it to inflammation, and this deflation he thinks is exceedingly prone to occur when abdominal operations involve the tissues between the umbilicus and the diaphragm. He states that if we examine the lungs of a subject, in which the diaphragm has been completely paralyzed before death, there will be often found complete uniform collapse of one or both lower lobes, and this collapse, or deflation, is so complete that the affected lobe usually sinks in water, and compression under the water fails to cause the escape of any air bubbles. He does not think that this collapse is due to plugging of the bronchial tubes but is dependent upon the fact that the diaphragm is paralyzed, and as it is chiefly involved in the inflation of these lobes, it is the actual cause of their collapse. These views have been confirmed, not only by certain autopsies but also by the use of *x*-rays, the patient being examined by this means within a few days after operative interference, the *x*-rays showing immobility of the diaphragm and evidence of pulmonary inactivity in the lower lobes of the lung. Furthermore, Pasteur is convinced that actual paralysis of the diaphragm is not necessary for the development of pulmonary collapse because functional inactivity of this large respiratory muscle may produce the same results. Thus, acute inflammation or acute pain in the neighborhood of the diaphragm by fixing this muscle practically paralyzes it so far as its effect upon the lung is concerned, and impaired inflation or deflation occurs.

In regard to the physical signs of massive collapse, Pasteur thinks that displacement of the heart's apex toward the affected side is the only sign peculiar to this condition. He states that it is always present when the collapse is unilateral and sufficient in degree, but may be absent when both lower lobes are involved. The displacement is not, in his opinion, due to the changes in pressure produced by the collapse of the lung. In uncomplicated cases the dyspnea passes away in a few hours; the symptoms of pulmonary trouble subside, and after twenty-four hours the patient may seem to be entirely well of his thoracic complications. Occasionally, however, massive collapse is followed by bronchopneumonia, the number of cases of which has not as yet been determined. In some instances, however, the massive collapse results in death, and in one particular patient, upon whom a gastrostomy had been performed, although the patient took the anesthetic very well and left the table in good condition, he developed cyanosis three hours later. Both bases of the lung were found dull on examination, and the patient died within twenty-four hours. At the postmortem examination the greater part of the lower lobes were absolutely airless.

The point that Pasteur wishes to emphasize, and we think that his point is well taken, is that operations upon the upper abdominal zone are particularly prone to produce pulmonary complications, and that the surgeon, under these circumstances, must remember that he is practically "hitting the patient below the belt." Another point of importance is to remember that the ether in the majority of instances cannot be considered directly responsible for the serious complications in the lungs which are generally laid at its door.

ABSORPTION FROM INTRAMUSCULAR TISSUE.

Several years ago we called attention in the THERAPEUTIC GAZETTE to the investigations made by Meltzer and Auer in which they seemed to prove that the absorption of medicines given by intramuscular injection is infinitely more rapid than is absorption when they are given into the subcutaneous tissues—a fact which has practical application when medication is promptly needed. We may add that since then we have fre-

quently resorted to intramuscular injections of drugs the action of which we wished to obtain at once, and that our practical experience certainly supports the views advocated by Meltzer and Auer. In the *Journal of Experimental Medicine* of March 1, 1911, these pharmacologists publish another paper on this subject, and state that they have repeated their work and extended it in order to meet a number of criticisms which have been published since their earlier communication. Duplicating their previous work, and performing experiments along collateral lines, they see no reason to retract what they urged some years ago, and feel more confident than ever that intramuscular injections are, next to intravenous injections, to be relied upon for prompt and immediate effects, without any of the dangers associated with intravenous injection.

It is interesting to note in this connection that there seems to be considerable difference in rapidity of absorption from different muscles. Thus, Meltzer and Auer found that the lumbar muscles permitted a rapid absorption, whereas the gluteal muscles failed to give equally good results. The claim made by some of their critics that the results obtained were due to the entrance of the needle into a vein, or as the result of injury to a vein, they have completely disproved. In our personal experience we have employed the pectoralis major muscle as being the most convenient and useful for the intramuscular injection of rapidly-acting drugs like strychnine, atropine, camphor, and the more slowly-acting, but nevertheless valuable, drug digitalis in the form of digitalone.

TUBERCULOSIS AND HOME TREATMENT.

In a paper published by Dr. Walsh in a recent issue of the *Journal of the American Medical Association,* he deals with the folly of sending tuberculous patients away from medical supervision, since too often they are inclined to follow their own conceptions of what is a good thing to do, and, on the one hand, take too much exercise, or, on the other hand, take too little. That the tuberculous patient should be more or less constantly under medical supervision during the whole period of his "cure" is, we think, pretty generally recognized, although if the lesion is a small one and the patient is known to be well-balanced in judgment, very frequent professional consultations are unnecessary.

There is, however, a greater folly than the separation of a patient from medical supervision when the patient is tuberculous, namely, the sending of the patient to a point far from his home, where he is prone to suffer from homesickness, and where it may be difficult for him to find adequate means of support. Physicians who practice in those parts of the Union which are much resorted to by tuberculous patients know only too well how many hopeless cases spend all their strength and all their funds at a time when these two weapons for defense against the invasion of the disease should be most carefully husbanded. While it is practically true that a large number of tuberculous patients are much benefited by being sent to a climate which is particularly conducive to the restoration of health, a very large number of others get well equally rapidly if they are given plenty of fresh air, sunshine, and good food in their own homes. We do not belong to that class which believes that home treatment is always the best, but we strongly advocate a very careful selection of those who are to be sent away at a great distance for the restoration of their health. Patients with active fever, with rapidly breaking-down pulmonary tissue, or who are so far advanced in the disease that recovery is impossible, should be made as comfortable and content as may be at or near their own homes, and should be kindly but firmly prohibited from the consideration of climatic resorts which may offer much to some patients, but which can bring nothing but disaster to the particular individual under consideration.

URINARY CALCULI.

With the larger experience incident to the number of calculus cases, and those suspected of calculus, which are sent to the *x*-ray photographer, with the improvement in instruments of precision, and with a wider knowledge of the use of each instrument, it would seem that the diagnosis of a calculus in the kidney or the ureter at the present day should be made with almost absolute certainty. That this is not the case could be attested by the experience of nearly every man who has profited by the study of a large clinical material. It still remains true that occasionally the operating surgeon fails to find stones the presence of which has been diagnosed by the Roentgen specialist, and finds stones which have not been evidenced by carefully taken *x*-ray pictures. Pirie (*Edinburgh Medical Journal,* July, 1911) states that the value of the *x*-ray examination depends upon the observance of three rules: (1) The patient's bowels must be well cleared; (2) the lamp must be of the right degree of hardness; (3) if a radiogram is taken, the respiratory movements must be stopped during the exposure of the plate. As to the clinical findings as compared to the *x*-ray shadows, Pirie remarks that nearly three hundred cases have been examined when lumbar pain was the most prominent symptom and no calculus could be seen, and that in one of these an operation was performed with a negative result.

Price in the same journal notes that during the past three years 143 cases of possible urinary calculi have been sent to him for examination. In 102 of these a negative diagnosis was made, though in some instances the patient exhibited dangerous hematuria accompanied by persistent or intermittent pain. Of the 41 cases in which a positive diagnosis was made, there were 13 not yet operated upon, five in which the stone was passed by the natural route, and twenty-three cases which went on to operation, with the presence of stone proven in twenty-one.

Great diagnostic difficulty is encountered in that class of cases in which owing to the character or position of the shadow it is impossible to say definitely whether it is due to a calculus or one of the other conditions which mimic calculus. A case in point is reported, that of a man who suffered from colic and blood cells in the urine. The first *x*-ray, though showing a shadow, justified a guarded negative diagnosis. The patient returned in six months with symptoms as before but somewhat aggravated. The skiagram showed a shadow as at the first examination. Operation was performed by Mr. Stiles, and a small phlebolith placed about half an inch external to the ureter was found and removed. The patient was reported as having returned home cured. Price further emphasizes the fact, generally recognized by the *x*-ray expert, that ureteral calculi are prone to make a rapid shift of position and that this is not always in the downward direction.

Pasteau and Belot (*Paris Chirurgical,* Février, 1910) call attention to the important service from the diagnostic standpoint rendered by the introduction of ureteral catheters impermeable to the *x*-rays; these having been introduced the relation of a shadow-casting mass to the ureter can be quite definitely determined. These authors hold that for a perfect image of the kidney the picture should be taken rapidly under compression, the patient not breathing at the time. A picture to be of diagnostic service should show clearly the details of the vertebral column and ribs and the shadow of the psoas muscle and the kidney perfectly outlined. Indeed, it is held that the *x*-ray alone is now able to clearly determine whether or not a kidney be present, its size, conformation, and other factors bearing upon its health or disease.

Rafin (*Lyon Chirurgical,* Avril, 1911) records an operative experience for the relief of renal calculi upon 43 patients, this since 1906. Five died (between 11 and 12 per cent). It is noteworthy that all the fatalities occurred in cases already infected. There were 15 nephrotomies with 5 deaths, and 14 primitive or secondary nephrectomies without a single death. Of four

bilateral cases with infected kidneys three died.

These results correspond very closely with those derived from a general statistical study, and indicate the need for early operation when it is evident that a renal calculus cannot be passed. They also indicate that when there is left one sound kidney, it is highly desirable to remove an organ already profoundly disorganized by infection.

As to the conservative treatment of renal calculi, there is no reason to suppose that any of the solvents advocated have the faintest effect. In the case of a calculus obviously too large to be passed and exciting symptoms, the indications for operation are imperative. One which is symptomless and unattended by changes in the urine indicative of infection or degeneration which may perhaps have been discovered by an *x*-ray examination undertaken for the detection of some other condition, may be left untreated since it is probably embedded in the kidney substance. That it predisposes to infection or degenerative changes can scarcely be doubted. Where operation is undertaken for the removal of a renal calculus the tendency of the day is toward a pelvic rather than a renal section. The ureteral stones are reached extraperitoneally through a muscle-splitting operation. In clean cases immediate suture of the renal pelvis and peripelvic fat and connective tissue is usually successful in preventing leakage.

INTESTINAL CONGESTION OF STASIS.

The increasing amount of attention devoted to this condition by surgeons is mainly because of the extraordinary results incident to the forms of surgical intervention advocated and practiced by Lane. This brilliant and almost convincing writer and clinician teaches that chronic intestinal stasis is in part, if not wholly, due to station or angulation. He points out the action of the gastrohepatic ligament in angling and hence rendering less patulous the pylorus, thus making more difficult the evacuation of stomach contents and favoring the development of ulcer. He notes the angulation of the duodenum at the junction of this portion of the gut with the small intestine below, incident to ligamentous attachment. Obstruction thus caused he believes produces either dilatation, or if not sufficient to this end, at least congestion of the first part of the duodenum and predisposes to ulceration. He notes that the pain incident to obstructing angulation at this point is relieved by lying down; and for obvious mechanical reasons. Stasis in the ileocecal region he holds responsible for nearly all the pathological conditions there found. The hepatic and splenic angles of the colon may also be points of stagnation, angulation being induced by sagging of the transverse portion of the canal. The sigmoid is especially the seat of stagnation, usually becoming redundant in its lower portion and filling the true pelvis and allowing large accumulation of material. This Lane states is particularly characteristic of tubercular subjects, and he questions as to whether a tuberculous infection may not have been secondary to a depressed vitality incident upon an autointoxication due to fecal stagnation. With this in mind he has practiced in some of these consumptive cases an anastomosis of the ileum into the lower extremity of the sigmoid, and describes results which are astonishingly good.

Chapple (*British Medical Journal,* April 22, 1911) reports upon fifty cases of intestinal stasis treated by either anastomosis or colectomy. The symptomatology he gives for these conditions is similar to that made classic by Lane. The reported results are uniformly perfect. No diarrhea is recorded following operation; on the contrary there is complaint of constipation. Chapple regards the mortality following colectomy as negligible, since of 16 cases operated on in 1909-1910 only one died.

It is noteworthy that in spite of Lane's splendid advocacy of colectomy in selected and inveterate cases of colonic stasis, there have been few corroborative reports as to the beneficial effects incident to this operation from other sources.

The operation in itself is neither difficult

nor particularly dangerous. The patients who present the indications for its performance are fairly numerous, and because of their constant and unrelieved suffering are doctor haunters and gladly consent to any operation which gives a promise of betterment or cure. Neither in the past nor at present are surgeons loath to operate, even in the most radical manner, when the results desired and expected from operation are reasonably certain, and the more spectacular and apparently formidable the surgical procedure, provided it be not too technically difficult, the more strong its appeal to a certain class of mind. Hence it is quite certain that colectomy has been performed many times by men other than Lane. Their failure to report results is fairly conclusive as to the unsatisfactory nature of such results.

The static theory of intestinal stagnation is one widely accepted to-day. Operative procedures based on this theory have not met with such success as to justify their general practice. That angulation and prolapse are favoring factors in the development of stasis and congestion cannot be doubted; that there is a deeper and underlying cause incident to muscular inadequacy is equally certain. That the best results are at present attained by methods other than surgical seems to be the feeling of the majority of the leaders of the medical profession.

REPORTS ON THERAPEUTIC PROGRESS.

ERGOT: A CLINICAL EXPERIMENTAL STUDY.

SHARP makes a report on this topic in the *Proceedings of the Royal Society of Medicine of London* for May, 1911. He first explains how ergot acts in labor, or what one may expect of it, and says:

(*a*) It collects the small irregular and non-effective pains into larger effective contractions, so that the labor is sooner ended and the uterus saved work.

(*b*) The drug improves the tone of the muscle-fibers, whereby the uterus gains an advantage in that its musculature is ready at once to respond to further contraction, and thus neither time nor energy is spent in bringing the fibers up to that point at which contraction begins.

(*c*) By acting on the abdominal muscles and on the muscular system generally, the tissues as a whole are improved in tone. This helps the uterus in its struggle.

The foregoing may be called the immediate benefits, but there is often a more remote beneficial action.

(*d*) The forcible contractions following the administration of ergot, by expelling uterine contents, such as after-birth, membrane, or other foreign body, relieve the organ of its troubles and set it free to recover itself in the ordinary way of nature.

"POSTANESTHETIC" VOMITING.

MORTIMER writing in the *Lancet* of June 17, 1911, discusses this topic. As to prevention, he says that when there is time and opportunity full inquiry should be made into the history and condition of patient and the excreta should be examined. The nature of "bilious attacks" should be, if possible, ascertained, especially in children. Every endeavor should be made to attain a satisfactory state, in view of the anesthetist, no less than the operation. Such preparation may include medicinal, dietetic, or spa treatment, and the attentions of the dentist. Neurotic patients need encouragement, and a few doses of some sedative, such as bromide of sodium, chloretone, or chloralamide. The surgical preparations should, as far as possible, be so arranged as not to cause them alarm.

Directions as regards fasting and evacuation are especially needed when the operation is to take place in a private house or

at some unusual time. Modifications must be made according to the patient's age and condition, but as a rule if the operation is to be before 10 A.M. nothing should be taken after the previous evening, except thin barley water or tea (with hardly any milk or sugar). If before 1 P.M. clear soup or tea with toast can be given about four hours before. If later, a light breakfast (an egg or a little fish) at 8 A.M., with a cup of soup at 12 or 1 if the operation is at 4 or 5 P.M. Moderate quantities of water or other simple drink may be allowed to within an hour of the operation; if refused there may be much discomfort.

In most cases it is better to give an aperient two nights before the operation than the night before, only food easily digested (but not sloppy) being taken on the following day, and an enema given in the evening. This plan gives a night free from disturbance. The nurse should notice the character of the stools, and more may need to be done if there is evidence of constipation. Purging that is excessive or too close on the time of operation should, however, be avoided, especially in very young, old, or exhausted subjects. It not only has bad general effects, but is liable to result in atony, gaseous distention, and nausea.

The teeth should be cleaned and the mouth well rinsed. Excess of saliva and mucus must be avoided by injection of atropine (gr. 1/100) and by not giving ether, especially with an inhaler, to unsuitable subjects. The author has not observed any advantage (as regards after-results) in the use of scopolamine and morphine injections.

The anesthetic and method must be carefully chosen with regard to all the circumstances, including possible after-effects. The administrator should do everything possible to maintain a free air-way and subdue rigidity. These sentences are emphasized, for it is in these respects that unskilled administrators usually fail. Oxygen may sometimes be given with advantage, but it should not be used merely to counteract cyanosis unless all other measures have proved unsuccessful. The depth of anesthesia should be carefully regulated to meet requirements.

Washing out the stomach may be sometimes advisable before return to consciousness, especially in cases in which intestinal contents, mucus, or blood have passed into it.

Mortimer cites the following illustrative case:

F., aged eighty-six. Had been vomiting for five days (hernia, self-reduced *en masse*). The operator was averse to the stomach being washed out before operation, but with his assent the writer did so afterward, removing a quantity of stinking fluid. No subsequent vomiting, such as would probably otherwise have occurred in spite of the relief of the obstruction.

The patient should be carefully moved, and the room quiet, somewhat darkened, and well ventilated. The right lateral position is usual, with the head low and turned to one side. A pillow under the mattress on the left side well maintains this position.

The Fowler or semirecumbent position (with head and shoulder still to one side) may be preferred for surgical reasons, and it may be recommended (after abdominal operations especially) with particular reference to the prevention and relief of sickness. Firm bandaging is advisable after abdominal and renal operations. After the latter some flatulent distention is usual, even when the kidney has been only felt and not wounded. The use of a flat sand-bag has been advised in conjunction with the Fowler position after laparotomy as lessening the tendency to vomiting and affording a comfortable support.

The question of using local or spinal analgesia may arise if after-sickness has, in spite of precautions, given much trouble on a former occasion, or would be especially harmful.

If vomiting happen before return to consciousness the head must be kept low and on its side, and the lips, if necessary, opened. A gag or mouth-wedge should be at hand, but the tongue should not be pulled out nor the jaw pushed forward as sometimes advised, unless laryngeal spasm is

continued, and after swabbing out the throat, for by so doing the air-way is opened and there is increased risk of vomited fluid or particles being aspirated. The pharynx and lower cheek may be gently swabbed out on cessation. The mouth can be frequently rinsed, but usually nothing should be swallowed for four hours at least. Sips of fluid are as likely to cause sickness as drinks and do not clear out the stomach. Tea without much milk or sugar or clear soup according to taste should be given first, not milk nor milk-and-soda. In special cases the surgeon gives his directions.

If vomiting recur one should not "try" one after the other (as has sometimes been done) a variety of domestic remedies and sedative drugs, in the hope of hitting upon something that will stop it. As in other disorders, one should first consider what is the probable cause of the symptom and then select remedies accordingly. If there has been swallowing of blood or mucus or complaint of the taste of ether, it is best to give a half-pint of hot water containing a teaspoonful of bicarbonate of soda. This will probably either wash out the stomach into the bowel or cause an effectual and final vomit. It may, however, be necessary to repeat it after an interval. Black coffee, to which some add bicarbonate of soda, also iced champagne in small quantities, have seemed to do good. The taste and smell of ether may be overcome by the use of thin slices of lemon and of toilet vinegar.

Neurotic patients may need sedatives, and for them the "counter-irritation" of a mustard leaf on the epigastrium may be recommended with confidence. Morphine is apt to increase flatulence, but is valuable if there is pain or reflex irritation. It must be given with caution, for sometimes it would merely mask a complication or (*e.g.*, in acetonuria) only add to the mischief.

When vomiting threatens to be severe or continuous the operator (and, the author would add, the anesthetist) if not aware of it should be informed. It is desirable that a detailed examination should be made of the urine, especially after interference with any part of the urinary tract and when acid intoxication may be suspected. A disturbance of metabolism or of elimination sufficient to be the prime cause of vomiting will probably be accompanied by other symptoms which should compel attention. Still, the author ventures to think the impression that vomiting almost invariably follows an anesthetization may be responsible for some cases of mild uremia or acetonuria escaping recognition.

If there is atonic distention, strychnine, pituitary extract, or ergotine (hypodermically) is often effective, and the bowels should be well cleared out by enemata if not acting. A rectal tube may be left in for an hour or so at a time and the abdomen massaged if there is no contraindication. Mr. Bidwell advises lavage of the stomach if vomiting and eructation persist, especially when there are signs of decomposing contents. Inhalation of oxygen is indicated when there are signs of defective aeration.

Glucose is valuable both before and after operations, not only to prevent or combat acid intoxication, but as a food which makes no call on digestion. A tablespoonful can be given with water and lemon-juice three times or more in the twenty-four hours, or in special cases it may be given by the rectum or intravenously (2.45 per cent). Raisin tea contains an appreciable amount.

Lately the author has noted the results of 407 administrations (not selected, but excluding nitrous-oxide and ethyl-chloride cases). There was no vomiting in 245, slight in 114; in 33 it recurred within the first few hours; in 15 it lasted longer. That is, three-fifths of the patients (on some of whom operations had been long and severe) had no vomiting, and this was inconsiderable in the majority of the rest, there being less than 4 per cent of the total in whom it was marked.

Snow and Clover reckoned that vomiting after ether and after chloroform took place in one out of seven administrations (over 14 per cent). They probably refer to severe cases only, not to transient vomiting. Rigden found vomiting to occur in 32 per

cent of his chloroform cases, and of these it was noted as troublesome in 16 per cent. After ether it occurred in 50 per cent, and was considerable in 15 per cent. Blumfeld found some sickness occurred after two-thirds of 571 administrations (chiefly gas and ether); in most of these it was transient. It must be remembered that the older statistics include few if any real cerebral and abdominal operations.

THE TREATMENT OF MISCARRIAGE.

YOUNG and WILLIAMS, in the *Boston Medical and Surgical Journal* of June 22, 1911, give us the following views:

1. Spontaneous emptying of the uterus takes place in but about 13.2 per cent of all miscarriages.

2. The likelihood of a miscarriage to complete itself increases with the duration of pregnancy.

3. When it becomes necessary to use artificial means to complete the miscarriage, the finger followed by the curette in later miscarriages, and of the curette alone in the earlier months of pregnancy, has given uniformly satisfactory results at the Boston City Hospital.

4. Experience has shown that where the cervix is extremely rigid it is better to introduce the curette and break up the fetus and placenta and remove them piecemeal than to attempt to dilate the cervix sufficiently to introduce the finger.

5. Packing the vagina and lower segment of the uterus is an unsatisfactory and often unsuccessful method of emptying the uterus. No success whatever was obtained in treating incomplete miscarriages in this way.

6. Packing is, however, of great value in two classes of cases: First, in exsanguinated patients, to stop the hemorrhage and give the woman a chance to recover somewhat from the loss of blood before emptying the uterus. Second, when the cervix is very rigid, a tight cervical pack for twenty-four hours will soften it so that dilatation may be attempted with safety.

7. The results of artificial methods are as good, but not better than where nature has succeeded in emptying the uterus.

8. Artificial methods are necessary in a majority of cases, however, simply because nature has failed.

9. In infected cases the essential thing is to get rid of the infectious material by emptying the uterus, the particular method employed making little difference.

10. The later in pregnancy miscarriage occurs the smaller the liability to become infected, but the greater the likelihood of developing grave septic complications if infection takes place.

11. The mortality is practically the same at all periods of pregnancy.

12. Induced abortions have a greater mortality than accidental. The mortality of patients admitted to the hospital after criminal abortions was 10 per cent.

A LECTURE ON THE TREATMENT OF PUERPERAL INFECTION.

Discussing this subject in the *Clinical Journal* of June 7, 1911, MCCANN writes in an interesting manner. He says: Let us take first of all a slight case with a temperature of 100° or 101° F. The patient feels seedy, and looks ill. We make a careful examination, and what we examine first is the abdomen. In examining the abdomen we should feel the uterus, feel if it is tender, if it is involuted, and also note if there is any abdominal distention, or if there is pain on pressure. Then turn the patient on her side and look at the vulva and perineum, and there we may find the explanation of her temperature—that is to say, we may see that the perineal wound has become infected. If we can exclude other causes of temperature and there is an infected perineal wound, that will probably be enough to explain the fever in that particular case, and we need not examine further.

The author recalls an instance where, in consultation with a medical man, he expressed surprise at what he thought was an incomplete examination. Examination of the perineum revealed a sloughing

wound which was sufficient to account for the patient's condition, without further examination, which would probably have infected the genital canal higher up. With suitable treatment the patient made a perfect recovery. It is therefore most important to make a careful examination of the perineum, because in very many cases that is where the infection begins. When we see that gray covering to the perineal wound and discharge we know at once that there is something wrong there, and the treatment which should be directed to it is the daily application of pure carbolic acid or tincture of iodine, together with the use of a ten-volume solution of peroxide of hydrogen, and the wearing of an antiseptic gauze diaper. Now, in those slight cases, assuming that the perineum is not the cause of the trouble, we examine further, and in our examination we note whether there is any swelling outside the uterus, or if the uterus is freely movable, or if there be any tenderness when we attempt to move the uterus. In those slight cases the author does not advise an investigation of the interior of the uterus.

The treatment to be adopted is to give the patient ergot or quinine, three or four grains of quinine every four hours, or half-drachm doses of ergot three times a day. The patient is propped up in bed, so that she is in a semisitting posture, which helps drainage, and hot vaginal douches containing a teaspoonful of iodine to the pint of hot water are given twice daily. That is to say, we carry out the treatment which has been adopted in Basle (where there is a very large obstetric clinic) with such success in cases of puerperal infection.

The author specially emphasizes what he believes to be the fact, that a large number of patients are made worse by intrauterine treatment; and, indeed, he has often thought that he would lecture on one occasion on the subject of when not to interfere with the uterus. But this simple treatment will not always suffice, for there are bad cases, and there are cases which have been made bad by treatment. If we have a case in which the temperature is about 102° F. and the temperature is keeping up, and we are unable to exclude other causes of temperature, an investigation of the interior of the uterus ought to be made. That is a rule which the writer asserts he makes for himself in practice, and if called to a case in which the temperature is 102° F., and it has kept up to that level or has gone higher, he always investigates the condition of the uterus. For that purpose it is far better to give the patient an anesthetic. And here he is aware of the difficulties there are in practice in the country, where there may not be much assistance at hand. But in the treatment of puerperal infection, and, indeed, in any infection, the rule should be to do our work once and thoroughly, rather than make several ineffectual attempts, which we are liable to do unless we have the patient under an anesthetic, and receive the assistance which we thereby obtain. It is generally possible to get a colleague to come and help us.

Now let us see how one proceeds in doing this. We must have the patient in the lithotomy position, and we start to systematically disinfect the genital tract from the vulva to the fundus of the uterus. We examine the perineum, and if the condition of the perineum is unsatisfactory, if it has been stitched, we snip the stitches and take them out, and disinfect the surface with pure carbolic acid or iodine. Look at the vulva, and if there are whitened plaques or sloughing areas, disinfect them. Then expose the vagina and cervix by a speculum, and we may find whitened areas on the surface. These are disinfected with carbolic acid or iodine. And then we come to the uterus itself. The cervix is simply steadied with the volsellum, not pulled down. If the cervix is sufficiently dilated we may be able to do without preliminary dilatation. If not, we must pass one or two dilators, and in doing this operation we should wear rubber gloves. The gloves we should have for this purpose are those with long cuffs. Now, with regard to investigating the interior of the uterus, we will find it freely stated that we can remove

everything with the finger. However, the author asserts, he has yet to see the finger which can get to the top of the uterus in the early days of the puerperium, and as a matter of fact it is simply absurd to talk of completely emptying the uterus with the finger; we cannot do it. In investigating the interior of the uterus the author uses a curette, but not to scrape with; he uses it as a probe, just to feel what is inside. If there are pieces to come away, he uses the curette as a rake and not as a scraper.

The author is very strongly opposed to curetting in puerperal infection. But if we use the curette in that way we will find it of great service, and it can cause no trouble. So we have to satisfy ourselves whether there is anything in the uterus. If there is anything there we take it out. If there is a piece of placenta we will be able to feel it with the curette and take it out with forceps. What ought to come away we will find comes away very easily. There is a great deal of mystification made about all these matters; retained products of conception are, as a rule, easily detached and taken away. After we have removed this material, we swab out the interior of the uterus with 1-in-2000 biniodide of mercury. The method of swabbing is to use squares of gauze wound around a pair of long forceps, this gauze having been previously wrung out of the biniodide solution. By means of gauze and forceps in that way we clean out the cavity; and we know that swabbing is much more effectual in cleaning the cavity than in douching. Armed with some squares of gauze, a pair of long forceps, and some biniodide solution, we are in a position to treat many infected cases. We should avoid scraping anything in the uterus; it should be raked out, and after removing the offending material the uterus is swabbed out by means of gauze soaked in 1-in-2000 biniodide.

If we find in the cavity some decomposing material, we remove that, and in all probability the patient will get well. Now, it is the custom in many text-books to draw a sharp distinction between cases of toxemia, due to absorption from necrosing products in the uterus, and septicemia, where no such products exist. But, as a matter of fact, no one can say where toxemia is going to end and septicemia is going to begin. And what one finds practically is that some cases beginning with toxemia end with septicemia. So we must be on our guard when giving a prognosis. Although in the great majority of cases removal of the offending material does not stop the trouble, in some cases the border-line between those two types of infection may have been passed, and septicemia may be starting, and in that case, of course, the prognosis is much more grave.

HEXAMETHYLENAMINE AS A POSSIBLE PREVENTIVE OF PNEUMOCOCCUS EMPYEMA.

In the *Boston Medical and Surgical Journal* of June 15, 1911, SHATTUCK calls attention to this subject. In conducting his report of cases he says that the results reported are certainly not encouraging to the hope that in hexamethylenamine we may have a preventive for empyema, one of the most frequent and, from the point of view of the comfort of the patient, the most serious sequelæ of pneumonia. These results, however, suggest that this drug may be a preventive of pericarditis and otitis media. Of course, it may be a mere coincidence that neither of these complications developed in the hexamethylenamine cases, but the contrast between the two series leads the author to continue the use of the drug, and thus perhaps to arrive at more definite conclusions.

FURUNCULOSIS.

SHINGLETON SMITH in the *Bristol Medico-Chirurgical Journal* for June, 1911, describes his treatment of boils as used in his own case as follows:

All the boils were painted with liquor iodi fortior, and when detected and painted whilst quite small simply withered up and gave no further trouble, and if allowed to develop to, say, the size of a shilling, they spread no farther, came to a head, and the

slough separated in a comparatively short time.

After the boils had ceased to come there continued to appear pimples, which shortly became pustular, and with painting withered up, which clearly shows that the resistance had been increased, inasmuch as those same pimples two months earlier would have shown no signs of pus, but spread as an indurated phlegmonous mass affecting the inguinal glands. Six months later another boil came in the same region, and discovering that the staphylococcus pyogenes aureus was at work, an injection of 250,000,000 was given; and following this there came at least a dozen commencing boils, all of which were painted with liquor iodi fortior, and all of them aborted.

Whilst the injections were continued, at first at regular intervals, the boils steadily diminished in numbers, and there was no sudden outbreak of them as appeared six months later after the injection of a single dose of 250,000,000 cocci. From this it appears that the immunity acquired had to a great extent disappeared, inasmuch as a boil appeared, and after the large injection a negative phase was manifested by the sudden abundant crop of small boils.

Three months later a small boil began, and another three months after that, both of which were aborted by the application of liquor iodi fortior.

Although Bier's cupping has been highly lauded in the treatment of furunculosis, in the experience of the author (a most painful one) the application of liquor iodi fortior is far more efficacious, and this he puts down to the following reasons:

First, the iodine application produces hyperemia in the skin and not in the fascia and subcutaneous tissue, as the author thinks the cup is more apt to do, especially in the case of boils which are situated for the most part in the soft parts, such as the neck, back, and gluteal region, when the skin is readily lifted up and drawn into the cup without very much stretching.

Secondly, the iodine application is constant and always acting, whether the patient be busy or otherwise.

Thirdly, the iodine destroys the germs in the surrounding skin.

In all acutely hyperemic states of the skin, whether they be due to sunburn, chilblains, toxic rashes, infectious fevers, or slight scalds, peeling more or less invariably follows, but the author states he has never seen the application of Bier's cup followed by any tendency to desquamation.

This may in part be due to the inefficient method of carrying out the application, for to keep the part congested one must be constantly busy applying the cup, a method which forbids one to do anything else; and if in a region where one cannot apply it with the help of a looking-glass, then it must prevent some one else from doing any work. It is quite impossible for a doctor on his rounds to apply the cup with any likelihood of doing good. In the case of iodine one can always apply it oneself; two and occasionally three coats may be necessary, but invariably within a short time the boil begins to mend.

Therefore we may presume that vaccine therapy is the most valuable constitutional remedy we have, but the immunity acquired is only temporary, whilst liquor iodi fortior is the most valuable and convenient local remedy.

THE ENEMA: ITS PLACE IN THE TREATMENT OF GASTROINTESTINAL DISEASES.

DRUECK writes in the *Proctologist* for June, 1911, on this topic. He submits nothing theoretical, but simply attempts to present a few facts about the varieties of enemas and the indications of each, what they should contain, and a word about the technique of administration.

He first considers the simple enema, such as is so commonly used to unload the bowel. For this purpose any form of syringe may be used and the water should be 95° to 100° F. This temperature causes the least reaction and peristalsis. The smallest quantity of water that will suffice must be used, because the colon may be easily overdistended and the patient thus suffer irreparable damage. Large quantities of enema

should never be used as they produce atony of the bowels by overstretching, just as atony of the anal sphincter is produced by stretching with the speculum. One quart of water should be the maximum, and where we wish to stimulate peristalsis one-half pint of cold water is better than a large warm enema. To increase the effect of the enema a teaspoonful of salt, molasses, or soap may be added, or one-half ounce of castor oil, glycerin, or oil of turpentine. Any of these added to the enema irritate the mucous membrane, remove the mucus from the bowel and soften the fecal masses, and thus aid in prompt evacuation.

In atony of the bowel, when a large part of the enema is retained instead of being voided, the colon may be stimulated to contraction by applying a cold towel to the abdomen and lower back. If this does not suffice the enema may be withdrawn by inserting a colon tube. An enema of a quart must never be allowed to remain in the colon as it positively produces paresis, and above all never add insult to injury by injecting another quart before the first is withdrawn.

If there is a desire to prematurely expel the enema it may be controlled by pressing a folded towel firmly against the anus.

The simple enema to unload the bowel may be given with the patient in the sitting or recumbent position. In these positions the liquid is retained in the sigmoid and lower descending colon. Therefore one quart is the maximum adult limit.

Always be careful in giving an enema not to introduce air into the bowel, as that stimulates evacuation and sometimes causes colic.

By the cold enema is meant one with a temperature of 70° F. This much-neglected enema should replace the simple tepid one very frequently, because the cold water stimulates the bowel so much more powerfully that a much smaller quantity of fluid will serve our purpose. One-half pint of cold enema will unload the colon just as well as a quart of tepid water, and by stimulating the muscle wall leaves the sigmoid and rectum in a contracted and anemic condition instead of a relaxed and congested one. The cold enema by stimulating the intestines removes quantities of decomposing matter and toxins and increases the portal circulation. The reaction following the cold enema also produces a flow of fluid toward the intestine.

In cases of chronic constipation or where hemorrhoids complicate, the injection of one pint of cold water each day acts very well.

The cold enema is also a very valuable means of reducing the temperature in fevers and in typhoid fever, an excellent means of stimulating the liver and kidneys, besides cleaning out the colon. The water is introduced through the rectal tube and should be injected slowly, the reservoir being about one foot above the patient's pelvis, and retained ten to twenty minutes and then slowly let out through the tube and another quantity of cold water run in. This procedure is repeated two or three times without withdrawing the tube. It is well in some cases to begin the treatment with the first half-pint of the enema at 90° F., and then gradually but rapidly reduce the temperature of the rest to 70° F. This helps the bowel to tolerate the enema and prevents its premature expulsion.

The hot enema or irrigation is used in the treatment of inflammation of the pelvic organs. It increases the blood-pressure and accelerates the heart action, and stimulates the kidneys. The action on the kidneys and heart requires a temperature of 110° to 120° F. An enema of 100° to 104° is of no use for this purpose. Following the hot enema it will often be noted that the patient voids a large quantity of clear urine. Kellogg places the hot enema superior to any diuretic drug in the treatment of suppression of the urine, and Cantani and Wonte claim good results in the treatment of colic and infantile diarrhea.

The purpose of the coloclyster is to introduce a large amount of liquid without overdistending the bowel. With the patient on his back not over three pints can be passed into the colon safely, but in the knee-chest or Sims position, six or seven pints

may be injected without inconvenience. This is especially valuable in the treatment of pseudomembranous colitis, catarrh of the cecum, and atonic and chronic dilatation of the colon when they complicate neurasthenia, autointoxication, and in collapse and shock.

The chief advantage of irrigation over the enema is that a flushing may be given the part. The first water introduced may be about the body heat, and the latter rapidly heated or cooled as required to obtain the therapeutic results without causing sudden shock to the surrounding tissues. Hot irrigation of the rectum and sigmoid is useful in inflammation of these structures or surrounding tissues, in rectal ulcer, spasm of the sphincter, and in some gynecological affections. The water should be 100° to 125° F., beginning at 100° and raising to 125°. Normal salt solution (salt one drachm to water one quart) is better than plain water to relieve local irritation.

The writer next gives a brief outline of the therapy of colonic lavage in the treatment of a few intestinal disturbances to show the indications for the different forms.

In the treatment of cholera infantum and cholera morbus a hot enema (110° F.) may be given after each stool to remove the irritating and infecting material from the colon and reduce the frequency of the stools. To this may be added any necessary astringents, such as zinc sulphate, 1 to 3 grains to a 6-ounce enema, or an equal strength of silver nitrate or lead acetate or 3 drachms of bismuth subnitrate. Where there is a great deal of griping pain 2 to 4 drops of laudanum may be given in 2 drachms of starch water. To reduce the fever give a cold enema as outlined above. For collapse give a large warm coloclyster at 100° F. and have it retained.

When the pain in the bowels is not due to inflammation, but rather to pent-up intestinal gases or to enteralgia, the hot rectal irrigation gives good results. Also in ovaritis and salpingitis. If, however, the irrigation is not convenient, the nurse can give the hot enema. One or two pints of hot water is injected into the sigmoid and colon and retained for five minutes. It is then expelled and more injected. This is repeated three to six times. The whole treatment may be repeated two or three times each day. The rectal tip of the syringe will suffice and the rectal tube is not necessary. The patient rests on her back to prevent the water passing high in the bowel. With the rectal irrigator the hot solution flows out continuously as it enters. It does not distend the tissues, but bathes all of the parts with the same temperature during the whole treatment. It is of course much more convenient for the patient and physician.

In colitis to cleanse the bowel use a quart of water at 110° F., containing one-half drachm of sodium bicarbonate and sodium chloride, and flush out the colon twice daily. After each bowel movement give a simple enema at 98° F. To relieve the pain and inflammation we give a cold enema at 60° F., to be retained five or ten minutes, or a cold rectal irrigation. This procedure may be repeated hourly if needed.

The cold enema or rectal irrigation or even the cold anal douche acts very nicely in treating prolapsed and irreducible hemorrhoids.

To lessen the congestion and stop the mucous stools in chronic diarrhea, give an enema at 98° F., and follow it with a tonic enema of one-half pint of cold water, to be retained. To reduce the bacterial growth give one to two large hot coloclysters each day and follow with a small coloclyster of one pint containing gallic or tannic acid one drachm. For the pain in the abdomen give a hot enema at 110° F. after each stool. For the alternate constipation and diarrhea give a large warm simple or soap coloclyster at 98° F. twice a week and follow with one pint of cold enema. The general treatment consists in toning up the general digestion by regulating the diet and by means of the enema remove the masses of feces and mucus and hordes of bacteria, and with small enemas containing gallic or tannic acid destroy the retained germs.

In the treatment of peritonitis the large coloclysters at 75° F. given three times

daily assist very much in preventing obstruction, and if there is added one drachm of turpentine it helps to evacuate the gas and relieve the tympanites.

In the treatment of constipation the enema serves a great many different purposes, but it must be judiciously employed or it may cause more damage than good. Where the constipation is due to atony of the bowel caused by loss of nerve sensibility, the hot enema at 110° for fifteen seconds, followed by the cold enema at 60° F. for fifteen seconds, twice a day, after breakfast and at night, accomplishes a great deal. Or we may use the rectal irrigation.

To increase the peristalsis the cold enema and the graduated enema, by which the bowel is stimulated on a gradually lessening enema, is of much use. We should always avoid completely emptying the colon, and also use a small cold enema instead of a large quantity of warm water, except when needed to relieve autointoxication or to remove hardened or impacted feces.

To remove fecal masses the hot coloclyster or enema of soap, oil, or glycerin (glycerin one to water four ounces) should be used. The enema may have to be repeated several times; it should be given every hour until the bowel is thoroughly cleansed, and then a pint of cold water at 70° F. to tone the bowel. The habit of the warm enema must be avoided, and it is well to make it a rule to give a small cold enema afterward to tone up the bowel.

The treatment of typhoid fever presents many indications for an enema, and yet it is many times forgotten. For the diarrhea give a hot enema of two or three pints, and after it is voided follow with a cold enema of one pint. For the constipation which sometimes displaces the diarrhea and for tympanites and meningitis give a copious coloclyster at 95° F. twice daily, and we may add yellow soap or one drachm of turpentine. For the high temperature or delirium give a cold enema at 70° F., to be retained for fifteen minutes, and repeat every three hours until the temperature reaches 102° F. But with a high temperature and a cold skin we have a different condition, and we want the stimulation of a hot enema and the cold friction rub to the skin.

For intestinal hemorrhage give a rectal irrigation with ice water, and two days after the hemorrhage has ceased give a cleansing coloclyster at 75° F. to remove decomposing blood-clots from the bowel. Gastric irritation calls for the withdrawal of food by the mouth and the giving of nutrient enemas.

PHARMACOLOGICAL PRINCIPLES FOR ADRENALIN THERAPY BY INTRAVENOUS INJECTION.

An article in the *Münchener medicinische Wochenschrift* of June 30, 1911, has this to say on this subject:

The medical practitioner is getting more and more interested in adrenalin, and the physiological usefulness of this substance (which is already considerable) is planting it firmly in the field of therapeutics. Through physiological and pharmacological investigation the possible actions of adrenalin have been discovered to be manifold, namely, upon the pupils, blood-pressure, regulation of sugar in the blood, and the activities of the intestine, uterus, and heart. However manifold in form these actions are they can be explained as being due to stimulation of the nerve-endings of the sympathetics. Thus, the action-complex of adrenalin in the living body is reduced to a comparatively simple one: it stimulates the sympathetic nerves or the dilators of the pupil, the cardiac accelerators, and the vasoconstrictors.

Such results found in experimenting on living animals one might like to confirm by experimenting upon the organs themselves, but the conclusions drawn from experiments on isolated organs must be taken with a certain amount of precaution, especially when they seem to show something new or something which contradicts the results gained by experimenting on the whole living organism. When, for instance, adrenalin (given in large doses in experimenting on the isolated heart) produces toxic effects beyond the stimulating effects ob-

served in the living animal, one would have to consider whether the harmful effects were not due to the inevitable presence of HCl.

All statements about the kind and localization of poisons are only of theoretical interest at first, because they cannot be applied directly in therapeutics—*i.e.*, as regards adrenalin, its usefulness as a vasomotor constrictor in treating too low blood-pressure depends upon the degree of this specific action throughout the whole organism, for only when this action (vasoconstriction) is somewhat isolated and predominates is it useful. It would be impossible to determine the dynamics of the circulation if its action of vasoconstriction were coincident with its accelerating influence upon the heart. However, it is a known fact that such is not the case, and that actually under certain conditions the vasomotor effects can be obtained alone. The less the by-effects of a drug the better its principle action can be made use of in therapeutics.

The certain conditions in which adrenalin can be used therapeutically have to be ascertained by pharmacologic experiments. These have shown first that every effect of adrenalin is local, as is also the case in its raising blood-pressure, which generally can only be obtained by bringing the substance in contact with the vessel wall. However, its intravenous application has very little therapeutic value because the effect is a very evanescent one, and by increasing the dose only the intensity, but not the duration, is increased.

Adrenalin is an alkaloid, and these substances usually have a tendency to increase the action by an accumulation of the active principle in the organism. In order to progress in the therapeutic use of adrenalin it was necessary to determine whether this also holds true of this drug; for if this were true there would be danger of poisoning by repeated injections of adrenalin, or repeated injections might become without effect. Kretzschmar found the astounding result that the effect of even the hundredth injection was equal to the first one as well as all the other intervening ones. He found also that by injections following each other in short intervals one could give an absolute amount which when given at one dose would have killed the animal. He consequently determined that one can administer this alkaloid intravenously (having a continued regulated flow) for any length of time. The blood-pressure is thus kept raised continuously, and its intensity depends only upon concentration and not upon the absolute quantity.

This peculiar incident can be explained by the fact that adrenalin does not accumulate (as do other alkaloids), but is destroyed with extraordinary rapidity.

Later P. Trendelburg, by means of special methods, has found that after intravenous injections adrenalin disappears from the circulating blood as quickly as its action, and that only by continuous infusion of adrenalin into the blood can the consequent rise of blood-pressure be kept up continuously. The same laws are true of another effect of adrenalin, namely, its glycosuric action—which Ritzman has determined.

THE MEDICAL TREATMENT OF AMEBIC DYSENTERY.

To the *New Orleans Medical and Surgical Journal* for July, 1911, BREM and ZEILER contribute an article on this topic. They assert no deaths from amebic dysentery have occurred since they began to use ipecac. No complications have developed. The relief of symptoms has generally been prompt, though some diarrhea usually persists during its administration, and sometimes continues for a short time afterward. Only one patient relapsed. This one had three recurrences, and appendicostomy was finally resorted to. Ipecac suspended in starch water was introduced through the appendix, and amebæ disappeared from the stool within three days. Many subsequent examinations during 124 days have been negative. Seven doses (45 to 85 grains each) of ipecac were administered in this manner, the bowels being previously flushed out with normal saline solution. The dysentery promptly ceased and improvement

was rapid. The patient has been employed as an orderly in the hospital, so that he can be carefully followed.

The authors state that they consider the eradication of the infection the most important criterion of the efficacy of any treatment. They have apparently fulfilled this test with ipecac in twenty of the twenty-one patients. The time they were able to follow the patients and make repeated examinations of stools was: 12 patients followed one to fifteen months; 3 patients followed two to four weeks; 5 patients followed less than two weeks.

In one patient dysentery recurred and appendicostomy was finally done, the ipecac being introduced through the appendix. In another patient, though there was no recurrence of dysentery, the amebæ reappeared within eight days after each of two thorough treatments with ipecac by mouth. Ipecac was then suspended in starch water, introduced per rectum, and followed by a small quantity of normal salt solution. Nine treatments were given. The small rectal ulcers were watched by means of the proctoscope and were seen to heal, becoming completely covered over by mucous membrane. Five stool examinations during two weeks following the ipecac enemas were all negative for amebæ.

The twenty-first case received a thorough treatment by mouth, after which amebæ reappeared. He was then given six doses of ipecac (60 grains each) by the rectal method. Amebæ were still plentiful.

In addition to these cases, they have notes of seven others treated by Dr. Crabtree. Two of these patients were treated with quinine irrigations for five and twenty-two days respectively, with some relief of subjective symptoms in one case, but with persistence of amebæ. They were then given ipecac with prompt recovery, and the amebæ disappeared. Examinations of stools were negative during twenty-seven and four days respectively following treatment.

The third patient was treated with bismuth, as reported above, for two weeks. The dysentery cleared up, but amebæ were still present. Ipecac was then given and the amebæ disappeared. Four stool examinations were negative during sixteen days following treatment.

The fourth and fifth patients were treated with ipecac from the beginning. One of these did not have active dysentery. Amebæ disappeared promptly in both cases, and five and six stool examinations, respectively, were negative during sixteen and twenty-six days.

These patients were prisoners and were under observation for five weeks to seven and a half months after treatment. There were no relapses.

The sixth and seventh patients were also treated with ipecac with relief of symptoms, but with persistence of amebæ.

The maximum dose of ipecac used was 30 grains daily, usually in divided doses. Dr. Crabtree writes that he is now sure that the coating of the pills was excessive and the doses too small, and he believes that these factors may have been responsible for the failure to cure the last two patients.

The authors have discussed in a previous paper the method of administering ipecac and the diet indicated. In their first cases they used pills with a thin salol coating prepared for them by one of the large drug houses in the United States. Although these pills usually caused some vomiting in four to eight hours after administration, the pills themselves were never free from the objection that the salol used in the coating makes up a quantity too large for safety. After they had been kept for some time, however, they hardened and were useless, because they passed through the intestinal tract intact. Therefore the pills should be freshly prepared. They ordered a thicker coating (1-6 inch) on their second lot of pills, following the recommendation of Simon. These pills also passed through the intestinal tract with the coating undissolved. Simon pointed out to them that a fresh thick coating of fused salol was readily soluble, and since then they have attempted to prepare their own pills. Their results have not been very satisfactory. It is difficult with fused salol to obtain a mean between a coating thick enough to prevent

vomiting and one thin enough to insure a quantity of salol sufficiently small to be used with safety. Herrick has weighed the quantity of salol required to coat ten 5-grain pills after the method recommended by Simon, and has found that the aggregate amounted to 300 grains. They filled 10-grain capsules with ipecac and weighed them before and after coating them thinly with salol. The salol on six capsules weighed 1.2 grammes. With these capsules they have had fair success, but the results have not been as good as with the first pills, to the use of which they have returned.

Thymol Treatment.—Their cases of uncinariasis are frequently complicated with amebiasis. After they began to treat the former with very finely ground thymol mixed with milk sugar, they observed, in a few instances, the disappearance of amebæ. One case of amebic dysentery of long standing cleared up quickly after one thymol treatment, and amebæ were absent on two subsequent examinations. They then reappeared in small numbers, however, and were present on discharge of the patient, though there were no further dysenteric symptoms. The amebic infection was permanently eradicated by thymol in the case of another patient who had had dysentery several months previously.

Summary and Conclusions.—1. The most logical and most important criterion of the efficacy of any treatment of amebic dysentery is the eradication of the infection.

2. The general treatment consists in rest, appropriate diet, and opiates when indicated.

3. For specific treatment, irrigations with solutions of various parasiticidal agents have proved unsatisfactory.

4. The great superiority of the bismuth treatment over irrigations or even over treatment merely by rest and diet has not been proved. Eradication of infection has not been discussed in the reports of the bismuth treatment.

5. Ipecac treatment has given satisfactory results in their hands. In a series of 21 patients with dysentery the amebic infection has been eradicated in 12 that were followed, with frequent examinations of stools, for from one to fifteen months. The infection was apparently eradicated in eight others followed less than one month. In only one instance of amebiasis with dysentery have they failed to get rid of the amebæ with ipecac treatment. Failure occurred in four cases of amebiasis without dysentery, but in these the treatment was not satisfactorily carried out.

6. Two cases indicate that, where ipecac fails to eradicate the infection when given by mouth, success may attend its administration per rectum or through the appendix after appendicostomy.

THE VALUE OF DIGITALIS IN HIGH BLOOD-PRESSURE CONDITIONS WITH INCIPIENT HEART FAILURE.

FRENCH in the *Clinical Journal* of July 5, 1911, says that a therapeutic point which arises out of the view that the vasomotor factor is a very important one in connection with the high blood-pressure of arteriosclerosis is that beyond a certain point the high blood-pressure is a necessity, and that without it the patient would be less able to accommodate himself to his daily work than if he were unable to produce and to maintain his high blood-pressure. If the cause of the high blood-pressure, namely, the rigidity or rather the lack of variability in the caliber of the vessels, can be overcome by arterial gymnastics, then the fall of blood-pressure so produced will be accompanied by benefit rather than harm; but if the case has reached a late degree in which the vasomotor control has very largely gone, then if the patient is to be up and about doing his daily work he must be able to maintain a proper supply of blood for the maximum-demanding organ, and this means that he can only continue with his work so long as the heart can maintain the high blood-pressure necessitated by the need of pumping to waste through peripheral vessels blood which cannot be prevented from going there by vasoconstrictor efforts.

Sooner or later heart failure is to be ex-

pected; when symptoms of it do set in it will be possible to restore the heart and at the same time to maintain the needs of the body with a decreased blood-pressure by putting the patient to bed, and this is essential when the heart failure is considerable; but when the failure in compensation is incipient only, and the patient is beginning to be short of breath on exertion or to have slight edema of his ankles, or some precordial discomfort, and yet has to continue with his work on account of family and other reasons, then efforts directed toward diminishing the blood-pressure will seldom succeed so well as will those which are directed to increasing the activity of the heart, and simultaneously, and in many cases unavoidably, increasing the blood-pressure at the same time. The blood-pressure may be found, for instance, to be 280 mm. Hg. in a given case in which there is some edema of the ankles and shortness of breath upon ordinary exertion.

It might be thought that the best treatment would be to give iodide of potassium or erythrol tetranitrate or some other drug which will diminish the blood-pressure. In practice, however, it will be found again and again that the best results as regards the patient are to be obtained by giving 15 minims of tincture of digitalis in plain water three or even four times a day. The blood-pressure will very likely rise from 280 to 300 mm. Hg., but at the same time the patient's sense of well-being will increase, his edema will disappear, his breathlessness will vanish, and he will be a better man and better fitted for his ordinary avocations with this digitalis treatment and increased blood-pressure than he would be upon treatment designed to diminish his blood-pressure. It might be thought that he would necessarily suffer from apoplexy from the bursting of a blood-vessel in the brain; undoubtedly there is some risk of this in any case, but one is on the horns of a dilemma, and has to choose the lesser of two evils—either the man must be reduced to invalidism with perhaps a wife and family dependent upon him, or he may be restored to working efficiency with a danger of apoplexy. In practice it is found that the risk of apoplexy does not seem to be any greater with the giving of the digitalis than without it. The vessels gradually become thicker-walled and accustomed to the high blood-pressure during the course of the many years during which the arteriosclerosis has been developing, and although they are apt to burst sooner or later the practical benefits of the digitalis treatment far more than counterbalance the risk of apoplexy which the patient may seem to run. He has had patients with very high blood-pressures who, having had digitalis in this way, have lived for many years, after heart failure definitely threatened, especially when with the digitalis course the condition of the vessels has been improved to whatever little extent may have been possible when the arteriosclerosis had reached such an extreme degree, by the use of massage, Schott-Nauheim exercises, days of relative fasting, and periodic purgation.

RECENT DEVELOPMENTS IN THE PHYSIOLOGY AND PATHOLOGY OF THE THYROID GLAND.

Beebe in the *New York Medical Journal* of July 8, 1911, tells us that overwork, both physical and mental, without sufficient sleep, is not infrequently followed by the development of active Graves's disease. This is particularly true in young women from eighteen to twenty-five years of age. It is very frequently noted in girls at college, girls entering society, athletes, school-teachers, etc. Such cases may be mild and yet show all the characteristic symptoms of the disorder. In most cases rest and tonics will relieve them. Recently Dr. Mayo, at the Academy of Medicine, stated that it was wise to ligate the thyroid arteries in all mild cases in which the diagnosis could be definitely made. Such a decision would provide a vast amount of surgery, but it is a quite unnecessary proceeding.

It is not the purpose of the author to say much at this time in regard to the therapeutics of thyroid disease, especially in regard to the value of serum treatment, but recently Dr. A. F. Taylor, of the University

of Pennsylvania, has published a brief note in the *Journal of the American Medical Association,* stating that he produced a quantity of active serum by Beebe's method, that this serum was given a thorough trial by Dr. Philip Brown in one of the hospitals in San Francisco, and that the results were absolutely negative in every respect. He states that they gave large doses of the serum without any effect, either curative or toxic, and since these statements coming from a man of Dr. Taylor's scientific standing tend to cast discredit on the whole procedure, the author thinks it is proper to state his present attitude in regard to this matter.

In the first place, he wishes to say that Dr. Taylor's note is so brief and without details that it is quite impossible to know what he did. He gives no description whatever of cases treated, length of time, or the dosage employed. It is simply a sweeping statement condemning the whole procedure. During the last four years more than 1500 cases have been treated with serum, and publication has been made from time to time giving a brief review of the progress in this field. The author asserts he cannot enter into details in the brief space of time available, but simply states that in his judgment the serum is a most effective therapeutic agent in the treatment of Graves's disease. This statement does not mean that all cases are cured. No therapeutic measure of any sort has ever been described which cures all cases, but the figures which were published two years ago in the *Archives of Internal Medicine* still hold good.

Statistics, however, may be a very unsuitable method for making comparisons. Probably no one has records of more failures of the serum after thorough trial than has the author. Of the 1500 cases treated, from 15 to 20 per cent should be considered failures. Out of a total of 1500 this makes 300 total failures, a very impressive number if they are gathered together in one body. On the other hand, fifty per cent of this number have been cured, in the sense that they are without symptoms, except, in most instances, a palpable thyroid. This makes 750 cases, likewise an impressive number. If no one else but Dr. Rogers and the writer was able to use this serum with satisfactory results, it might very reasonably be concluded that its value was more than questionable. As a matter of fact, a large number of clinicians of wide experience have used and are now using it with the most satisfactory results. The author asserts he is sure that most of these men are honest with their patients and would not continue a method of treatment which had absolutely no effect, either curative or toxic.

The physiology of the thyroid is most complex, and the pathology equally so, and it is not to be expected that any single method of treatment will avail immediately in all of the complicated conditions which ensue in this disorder. With the comparatively simple etiology of diphtheria many cases fail under serum treatment. Graves's disease is much more complex in its etiology and proportionally as difficult in treatment. The ultimate place of any method in therapeutics will depend upon the actual value of the procedure as determined by the therapeutist who understands the disease and the method of treating it. Until some marked improvement is made over present methods, the author asserts he is certain that antithyroid serum will maintain a place of very great usefulness.

HYOSCINE-MORPHINE ANESTHESIA IN OBSTETRIC MEDICINE.

GIUSEPPI in the *Practitioner* for July, 1911, in discussing this subject reaches the following conclusions:

1. That the object of hyoscine-morphine anesthesia is not to produce complete unconsciousness, but to produce twilight sleep, from which the patient can be roused at any moment, without her retaining any recollection of what has happened in the meantime.

2. That in hyoscine-morphine anesthesia we have an efficient means of controlling pain, and one that is practically safe, when ordinary precautions are taken.

3. That there is danger to the child, un-

less the fetal heart is carefully auscultated at frequent intervals.

4. That the course of labor is but slightly modified.

5. That the administration and repetition of the injections must be gauged by the amount of suffering.

6. That morphine should never be repeated, but only hyoscine.

7. That the solutions for injection must be freshly prepared for each patient.

8. That the best dose is hyoscine hydrobromide gr. 1-100, morphine sulphate gr. ¼.

ERUPTIONS CAUSED BY THE ABSORPTION FROM A BELLADONNA PLASTER AND FROM THE OCULAR INSTILLATION OF ATROPINE.

KNOWLES reports on this subject in the *American Journal of the Medical Sciences* for July, 1911. His conclusions are as follows:

1. More or less generalized eruptions not only occur from the internal administration of belladonna or its alkaloid, atropine, but also from absorption through the skin of local applications of the same.

2. The skin does not have to be broken or denuded of epidermis for absorption to take place; the symptoms of poisoning, however, develop much sooner if such is the case.

3. The great majority of the cases exhibit an erythematous or scarlatinal type of eruption, which is more frequently found on the face and the upper portion of the body, but in a fair number of cases the outbreak is generalized. Gangrenous, purpuric, and eczematous eruptions have been reported. The author describes a unique, or at least a very unusual, type of outbreak.

4. Although in a great many instances severe symptoms of poisoning are present, the eruption may be unaccompanied by other manifestations of drug absorption.

5. Mydriasis is a quite constant phenomenon; in a few cases, however, the pupils were only slightly enlarged, entirely normal, or unilaterally dilated.

6. The prognosis is favorable; only one death occurred in this large series of cases.

7. Belladonna or atropine may produce a local eruption from the local irritant effect.

HAY-FEVER AND ASTHMA.

BEAUDOUX in the *St. Paul Medical Journal* for July, 1911, in writing on his own experience and that of others says that looking back upon such cases as he has been fortunate to relieve, he did not find it necessary to fill them with drugs and antacids, nor to give any consideration to the general nervous system; neither did the cold bath, nor the cold douche to the spine, play any part in his curative measures, nor does the sufferer who finds immediate relief in some chosen locality need, nor does he pay any attention to, such constitutional measures. It is also true that a number of cases that have come under his observation have been cured by intranasal attention alone; hay-fever and asthma combined have given way under judicious and intelligent intranasal work. The late Dr. Schadle pointed out that free irrigations of the antrum of Highmore would relieve a number of cases. It was his pleasure, the writer states, after succeeding him, to meet with some of his patients, who came purposely for such treatment before the arrival of the hay-fever season.

To illustrate this point, he mentions the case of Miss S., whose father is a physician living in Michigan. She had sought refuge in the Lake Superior region, without any relief whatsoever. She came to St. Paul purposely to obtain this treatment and remained there about ten days, after having had both antrums irrigated every other day, with intranasal treatment daily in order to relieve the irritability and turgescence of the nasal mucosa, no cocaine being used, as the writer considers it harmful and only irritating to the mucosa, only alkaline solutions, adrenalin solution 1:4000, and bland oil sprays. She returned home by the way of Chicago, where she had never been able before to remain during the months of September and October. Some time in No-

vember he received a letter from her apologizing for not having written before and wishing him to know that she had been entirely relieved and had been able to remain in Chicago, which it had previously been impossible for her to do at that time of the year. That the irrigation of the antrum, and, as he asserts he has steadily done in all his cases, irrigations of the frontal sinus whenever possible, will not produce such beneficial effect in all hay-fever sufferers has been well demonstrated, but that in a certain number of cases it has a most beneficial action cannot be questioned. He asserts he would not, therefore, feel that he has done all that can be done should he overlook this part of the treatment in any of the cases presenting themselves to him.

He has cited the above case because all forms of treatment which had been taken before had not given any relief in any sense of the word, and climatic changes also proved useless. In coming to St. Paul in the throes and height of the disease she was promptly relieved in a few days of all her symptoms and made comfortable; then, further, was able to remain in a place where for years she had not been able to sojourn without further treatment.

THE ABUSE OF LOCAL TREATMENT IN GYNECOLOGY.

Byford writing in the *Chicago Medical Recorder* for July, 1911, gives excellent advice. He believes that glycerin and ichthyol tampons are almost universally recommended by the books and employed by the readers of the books, although not always by the writers. The glycerin is supposed to deplete the uterus or pelvis or something. That it draws a little water from the glands or subepithelial capillaries or some place, and that it macerates the epithelium for hours, may be mildly admitted. But what effect it can have in depleting the abundant anastomotic pelvic circulation against the force of gravity and physical exertion is hard to explain. Its method is osmotic and slow, and its effect superficial and slight. Glycerin solutions or mixtures of ichthyol cannot penetrate deeply, for most of the ichthyol is washed away with the glycerin, and most of that absorbed is washed into the general circulation. The near-by lymphatics may get a minute dose, but the sulphur in this minute quantity of ichthyol would be of the homeopathic efficacy. The tampon, if left in place very long, becomes a source of mechanical irritation that destroys the slight effect of the ichthyol on the superficial tissues.

As a support the tampon is not worth the price of the treatment, because, if hard enough to give efficient support, it cannot be worn continuously without producing injurious pressure, to say nothing of becoming offensive. It must at least be removed at night, and the patient cannot usually afford the time or money, if it were worth while, to have it properly put in by the physician every morning. We can have her properly place it herself. Some patients push a little wad of cotton into the vagina and become so accustomed to its pressure that they do not feel comfortable without it. It separates the posterior vaginal wall from the anterior, and when taken out leaves a temporarily unsupported anterior wall. The patient considers that the temporary discomfort is due to the absence of the tampon rather than to the harm it has done by its pressure and displacement of the parts.

A few years ago the old-fashioned copious vaginal douche, used almost hot enough to cause an artificial sunstroke, made the lives of a large majority of our American women miserable, and it is still recommended in some of the text-books. But with all of her efforts the patient only succeeded in overheating her blood as it rushed through the pelvis to the upper part of the body, without obtaining contraction of the pelvic blood-vessels longer than a few minutes at a time. To maintain the contraction of the vessels the heat must not only be maintained, but, as the nerves become accustomed to it, must be increased in order to keep up the stimulating effect.

The limit is soon reached, and the blood begins to return to its old channels as before. When the patient assumes the erect position the vessels are filled almost immediately. Heat might have some permanent effect in subacute inflammation or in a case of sudden congestion in a bedridden patient. The author asserts he has used it in hundreds of chronic cases month after month (and some patients have continued its use year after year) without getting any better effects than he gets from ordinary warm douches large enough to wash away irritating discharges. When used so to increase the pelvic circulation one can understand how they may aid in the absorption of recent exudates.

Medicated douches are usually failures because their effect, as ordinarily used, is too temporary. But if used rationally, viz., often enough and long enough to remove the septic discharge and to maintain their local effect upon the membrane with which they come in contact, they are, of course, useful in the vagina as elsewhere.

The question might be asked, "What would you do in place of local treatment in order to keep the patient out of the hands of the osteopath, Christian scientist, and other popular and more or less successful therapeutic faddists?" The physician would answer by saying that he would go the faddist one better by not only relieving the patient's mind of the fear of disease, but also explaining her condition to her in a simple way so that she could coöperate with him intelligently in carrying out the necessary treatment. In case an operation might be of any benefit he would explain to her what it would accomplish and what relief she might expect. If she did not wish an operation or if an operation were not necessary, he would find out what brought on her new attack and teach her to conduct herself so that improvement might take place, and, subsequently, tell her how to live in accord with her limitations.

In certain cases patients who have been able more or less comfortably to attend to their domestic duties are made worse by house-cleaning, house-hunting, moving, attending the sick, shopping, entertaining company, or other forms of physical strain. He teaches them to avoid these things. In order to recover from the effects of overdoing he has them lie down a portion of the day for the purpose of relieving the pelvic pressure due to the erect posture as well as to give the brain the benefit of increased cerebral circulation. When they begin to resume their domestic duties he impresses upon them the necessity of lying down for a certain period each day, of quitting certain kinds of work, keeping off the feet as much as possible, avoiding constipation, sexual activity, etc. Tonics, hydrotherapy, a regulated diet, and other therapeutic measures to put and keep her in the best state of health and comfort should, of course, not be neglected.

There is a class of cases in which there are no adhesions or exudates, and the conditions are not injured by exercise. The symptoms are due to ptosis, debility, catarrhal inflammation, and the patients require rest for the debility in connection with a gradually increasing amount of outdoor exercise. Some of them complain a great deal, and can hardly be stopped complaining by anything short of Christian science. Something besides routine local treatment is required to help them and hold them.

The author does not mean to attempt to tell all that can be done besides local treatment, but merely to call attention to methods. Each case will have to be individualized and treated according to its needs and the physician's resources. Medical knowledge is as necessary for the gynecologist as surgical training. The exclusively surgical gynecologist is only a half gynecologist.

If asked what he could recommend locally after thus condemning ordinary local treatment, the author would advise first to avoid making the patient's life uncomfortable, and impressing her disease upon her mind by giving her or having her carry out any local treatment that would not benefit her materially. The notion that a patient should be kept busy doing something in order to magnify the importance of the

treatment may do for a brief period for mental effect, but it puts us at a great disadvantage compared with the Christian scientist. If there is a urethritis or vaginitis, he would treat it on the same principle as an inflammation elsewhere. If there is a cervicitis, he could make the proper application, but not apply tincture of iodine or any single remedy in all cases. If there is an irritating vaginal discharge, he would use a douche once or twice a day so medicated as to counteract it and large enough to clear it out, but would not bother to overheat the patient by the old-fashioned thermal douche.

Endometritis, excepting those cases that demand curettage, seldom needs any local treatment except to insure efficient uterine drainage through the cervix. The development of the treatment of chronic nonseptic endometritis is at present being made by paying attention to the conditions of organs and tissues outside of the uterus as well as the so-called general conditions. Cases of old adhesions of the uterine adnexa with rigidity of the uterine ligaments and the consequent interference with the pelvic circulation are often made worse by uterine applications and vaginal tampons, and unless complicated by disease of the cervix or external organs they do better without any local treatment. We do them the most good by doing them the least harm.

In conclusion the author states that:

A large part of the local treatment made use of by the practitioner is useless, and should not be imposed upon the patient.

The generally accepted treatment should be simplified and restricted to definite indications.

Cases that cannot be benefited by local treatment may often be materially helped and made useful and comfortable without it, even when they cannot have the benefit of an operation.

Cases that require an operation for their cure, but cannot avail themselves of it immediately, if at all, do not necessarily require local treatment.

Patients whose symptoms are partly imaginary or due to nervous or other influences should not be treated locally merely to keep them busy, nor to keep the doctor busy.

PITUITRIN AND DIGITALIS IN OBSTETRICS.

HOFBAUER of the Königsberger Universitäts Frauenklinik writes, in the *Monatsschrift für Geburtshülfe und Gynäkologie* for September, as follows:

The scientific justification for the use of pituitrin in obstetrics lies as much in the anatomical existence of a regular hyperplasia of the hypophysis during pregnancy, which has been anatomically demonstrated, as in the physiologically proved fact of the specific contractive effect of the hypophysis extract on the uterus. The association of these two facts indicates that in pregnancy the secretion product of the hypophysis represents a physiological substance which in a certain measure acts as an exciting agent on the uterus, and this has led to the suggestion of the therapeutic application of this peculiar body in cases of insufficient contraction, the more especially since it has been experimentally proved that the contractive phenomena produced by hypophysis extract (pituitrinum infundibulare) possess the characteristics of producing peristaltic rhythmic uterine contractions.

It was the rhythm of these contractions which made it seem rational to us to try the active principle of the hypophysis extract in the first and second birth period. Previous observations had clearly proved to us its advantageous influence on labor activity, and encouraged us to continue the experiments on a broader basis. We are thus in a position, following on our preliminary communication in the *Centralbl. f. Gynäkologie*, No. 4, 1911, to give a detailed report on 66 cases.

We were soon convinced that the effectiveness of the preparation depends principally on its quality and the method of use. Solutions which have stood in use for several weeks lose noticeably in activity and take on a light pink coloring, as is the case

with adrenalin. For this reason we now use 1-gramme vials, which are opened immediately before use. Further, we find the therapeutic effect is unfavorably influenced by the addition of alcohol. In the beginning we had taken the injection syringes and cannulas from the alcohol in which they were kept and had syringed them with alcohol to sterilize them. A few early failures cleared up the matter, and since we have adopted only sterile salt solution for cleaning, the failures have ceased.

The injections were made subcutaneously at the outset, and as we have never observed unpleasant local after-effects, we have remained faithful to this method; with the difference, however, that we do not now, as at first, make the injections in the upper arm only, but also in the tissue of the infraclavicular region. Experimental injections have been made intramuscularly on several occasions, but the effects were distinctly inferior to those obtained by the subcutaneous method.

The dosage of the preparation (we use exclusively pituitrin, Parke, Davis & Co.) was at first doubtful. We began with the smallest possible doses, and it cannot be doubted that sometimes ½ Cc. suffices for the purpose. The dose used in the last 40 cases was 1 Cc. The following was the method of administration employed: 1 Cc. pituitrin is injected with the usual aseptic precautions. If, after ten minutes, only weak or short contractions occur, or if the injection fails, a second injection is at once made. It is only in quite exceptional cases that a third is necessary to start the contractions; up to now this has only been necessary in one instance. However, we do not fear to go up to 3 Cc. in the intervals mentioned, as up to now we have not observed any unpleasant consequences.

For the rare cases when we used the preparation for puerperal ischuria, which could not be otherwise combated, a single injection of 1 Cc. sufficed. It was not used in cases in which inflamed hemorrhoids, fissures of the anus, or painful conditions of the introitus vaginæ were the cause of reflex ischuria.

No serious after-effects in consequence of the injections were observed. A few patients complained of a passing sensation of burning at the site of the injection, occasionally also of a transitory feeling of discomfort with perspiration following the injection. In no case, however, did we observe any lasting disturbance or complication in the puerperium that might have been due to the medication. Kidney troubles never occurred, although a considerable secretion of phosphate was noticeable in the days following the birth. In consequence of the experiments recorded we can thoroughly indorse the opinion of other experimenters that "pituitrin may be regarded as practically non-poisonous" (v. Frankl-Hochwart and Fröhlich). On the other hand, our clinical observations do not coincide with the experiments on animals, to this extent, that we always found a second and third injection effective, in whatever interval the injections were made, whilst some authors operating on animals got no effect from a repeated administration of pituitrin and therefore are inclined to speak of a refractory state of the uterus (Howell, v. Frankl, and Fröhlich).

We must mention here that we have only made the injections on healthy parturients. Whether with nephritis or myocarditis the precautions are necessary which Klotz recently mentioned in connection with experiments on animals must be determined from further observations; with goitre heart, at any rate, we saw no unpleasant after-effects.

The contractions produced by the preparation may be designated as rhythmic. The uterine contractions usually occur after three minutes, but the interval between the injection and the first contraction may be eight or ten minutes. Here also individual circumstances come into play. We have not found a constant difference in the rate of the occurrence of the contractions in a primipara as compared with a multipara. When the contractions have once commenced they follow at intervals of one-half to three minutes. In this connection, exceptional individual cases apart, the size of

the dose seemed to have a considerable influence.

The contractions may now follow each other until the end of the birth, but sometimes, after an hour or more of at first energetic contractions, they relax and a complete cessation of labor follows. In these latter cases a second injection again brings the contractions into play and the labor to an end; only in three cases did we find it necessary to make a third injection. The isolated contractions which occur under the influence of the hypophysis extract are of varying duration. We observed contractions which only lasted thirty seconds, and on the other hand others which lasted three minutes. We especially noted that the first or even the following contractions showed a regular type. The ascent to the complete development of the contraction of the uterus takes place in the first case suddenly and rapidly; in the latter contractions are more gradual. In the intermediary stage between the single contractions the uterus wall relaxes in the same way as otherwise during the birth activity.

It is remarkable that pituitrin given in the "opening period" distinctly acts more quickly and more effectively when a certain number of spontaneous contractions have already taken place—*i.e.*, when the os uteri has attained a certain width. On the other hand, with the width of cervix only large enough for a finger to pass, the contractions soon cease. In this connection an attempt to produce abortion with a tuberculous subject in the fourth month of pregnancy failed. It is true that after each injection contractions took place, which finally widened the cervix to such an extent that a Hegar dilator, width 19, could be introduced; but in consequence of increase of temperature the abortion had to be induced by operation.

During the "expulsion period" pituitrin renders excellent service for weak uterine contractions. With moderately narrow pelves, for instance, we see how the scalp overcomes the hindrance during the energetic contractions. With weak contractions in consequence of great dilatation of the uterus (gemini, hydramnios) the preparation was also successful. We also use pituitrin with great success in placenta prævia lateralis after completing the bursting of the bag. These are in a certain measure the "school cases" for its use. On the other hand we do not advise the use of pituitrin where during prolonged labor the actively contracting part of the uterus has almost completely retracted over the child's body and the expulsion is delayed through insufficient activity of the abdominal press. It has not yet been used by us to combat postpartum hemorrhage, for which purpose the preparation was first recommended by Foges and Hofstätter. Neither have we used it in the treatment of abortion, nor for Cæsarian operations.

On controlling the fetal heart-beats one could notice a strong retardation not only during the period of the contractions, but also for a certain time in the pause between contractions. If the uterine contractions followed at short intervals, we considered this lasting retardation from the outset as serious for the condition of the child. The observations taught us, however, under continuous careful auscultation of the fetal heart-beats, that these fears were in so far unjustified that the children were born without any injury, even if intrapartum meconium expulsion or the above-mentioned retardation of the fetal heart action were apparent. We have made it our duty in every case treated with pituitrin to pay special attention to the heart-beats, in order to be able if necessary to operate in any threatened danger. Up to now no judgment is possible as to whether a part of the injected hypophysis extract does not penetrate from the maternal into the fetal circulation, and there in the same way through direct influence on the heart muscles cause a retardation and at the same time an increase of the heart contractions, as has been proved experimentally an animals by v. Cyon, Oliver and Schäfer, for which reason pituitrin was taken up into the category of vagotonic medicaments.

The résumé of our experiences up to now would point to the fact that pituitrin is a useful and sovereign uterine contracting agent. In face of the recommendation by other parties of hypophysis extract as an analeptic or for the treatment of atony it must be mentioned that for the purposes mentioned other medicaments and methods are sufficiently at our disposal, but that for causing uterine contractions none equal the above, far less rival it, in regard to reliability or duration of action. According to our observation, hypophysis extract should keep a permanent place in our materia medica in the sense mentioned. It is certain that in consequence of this medication several otherwise necessary operations become superfluous.

Some experiments have been made on the question raised by Neu as to whether adrenalin could not also be used as a uterine contraction agent. Out of seven cases the preparation failed completely six times. In one case, in which adrenalin was given in the "opening period," moderate contractions set in, which lasted one hour.

The experience of pharmacologists that the digitalis preparations have a generally stimulating action on organs with non-striated muscle cells formed the starting-point for a series of corresponding experiments. The intended influence on the uterine contractions was here entirely lacking. However, in practice we made an observation which seems to us sufficiently interesting to be mentioned here. The first case was a primipara with presentation of the head in a high upright position, premature flooding, insufficient dilatation of the cervix and danger of the child's life (meconium expulsion and irregular heart-beats with variation of 80 to 160 a minute). As a delivery in the interests of the threatened but already injured child could only have been rendered possible by means of an operation, it was decided to try to hasten the birth by causing violent contractions. Digalen (1 Cc.) injected intramuscularly failed completely in this direction. On the other hand we were able to observe that a few minutes after the digalen injection the child's heart-beats, which for nearly an hour had shown the above mentioned variations, now became regular and strong and lasted several hours (demonstrative of the heart-beat curve). The registration of this phenomenon caused us to consider the possibility of some internal connection of processes, and the thought which came to us was that a fraction of the digalen injected into the mother had penetrated into the circulation of the fetus. In view of the well-known fact of the transition of all water-soluble substances from the mother to the child, this idea seems quite plausible to us; moreover, we know that a primary effect of digitalis on mammalian hearts is the regularization of a previously irregular heart activity—it occurs after small doses and is therapeutically of great importance (Lehrbuch von Meyer-Gettlieb). Starting from this observation, we were able in six further cases to successfully combat the commencing intra-uterine asphyxia (hollow and greatly accelerated fetal heart-beats, or varying in wide margins) until spontaneous delivery took place, or could be brought to an end under easy conditions.

This is probably the first time that trial has been made to cure the intra-uterine asphyxia medicinally by means of heart tonics administered to the mother, and it remains for further experiments to decide to what extent and degree and under what conditions the way indicated may be followed. We are not yet able every time to precisely analyze the genesis of the acute fetal circulation weakness, as often the causes of the functional or coördination disturbances are unknown. It will then be possible to know which application method of digalen (perhaps intravenously) or similarly active bodies (above all strophanthin) is soonest able to place the fetal heart under the digitalis or strophanthus action. It is scarcely necessary to mention that no effect can be expected where the intra-uterine asphyxia is caused by mechanical momentum (compression of the umbilical cord, pressure on the brain).

The following experiments have since

been reported on the use of pituitrin in consequence of numerous trials:

Kehrer (Bern) calls pituitrin the best uterine contracting agent.

Tetanus uteri was not observed (Gynäk. Congress, 1911).

The Dortmund Klinik used the preparation with all kinds of uterine contraction weakness with the best success. Furthermore it proved valuable with ischuria during confinement. Tetanus uteri never occurred during the birth. The fetus was never injured. On the other hand, the preparation is not suitable for causing abortions. (*Medicinische Klinik*, 1911, No. 29. Committee report.)

The results correspond entirely with our experiences.

DEDUCTIONS FROM CLINICAL EXPERIENCE IN THE USE OF A POLYVALENT BACTERIAL VACCINE.

VAN COTT in the *New York State Journal of Medicine* for July, 1911, tells us that the object of his paper is to briefly set forth his experience in the use of a stock vaccine, containing virulent strains of those organisms commonly producing sepsis.

Early in 1908 a vaccine was prepared, which contained the following organisms in the proportions stated:

1 Cc. contained	Streptococcus Longus		50,000,000
	Staphylococcus	Aureus, Albus, Luteus, Citreus	500,000,000
	Bacillus Coli Communis		200,000,000
	Total		750,000,000

The theory which led to this combination was that it would be valuable in many cases in which time was an element, and autogenous vaccines impracticable; and that if clinical experience of its use demonstrated that it could be safely used by the general practitioner, with reasonable expectation of desired results, such a polyvalent vaccine would find a wide sphere of usefulness.

The mode of trying out the polyvalent vaccine was based upon the thought that to be of really practical value its administration should be perfectly simple, and devoid of the necessity of either determining the opsonic index or culturing the blood. And this has seemed worth while, in view of the large number of physicians throughout the country who possess neither the necessary technique themselves nor the facility for procuring it, whose patients would otherwise be deprived of a very valuable method of treating infection. No undervaluation of the opsonic index, blood cultures, or indeed autogenous vaccines, is to be inferred from the above statement. The question here involved is, whether these procedures are sufficiently negligible from the clinical standpoint to make vaccination safe and serviceable without their employment. Is the negative phase such a danger-point as to be strenuously safeguarded? Is the time element of infection sufficiently important to warrant the use of a mixed vaccine, on the possibility of its containing a virulent strain of the infecting species in the concrete case? Is the value of a vaccine dependent upon autogeny, or virulence of strain?

The writer has always felt that there was less danger in the negative phase than in the rapid increase in both bacteria and toxins involved in the loss of initial time; for it must not be forgotten that with this increase the somatic cells are prone to become benumbed with toxin, and lose their reactionary powers. On the other hand, autogenous vaccination would seem *a priori* not *sine qua non*, for the very simple reason that the infecting organism is not original to the individual infected. B acquired it from A, and A from some one else. The really important factor would seem to be virulence of strain.

On this assumption clinical work was begun, and the vaccine was administered to a number of cases, including puerperal sepsis, phlegmon, sepsis following abortion, mastoiditis, endocarditis, etc. Some of the cases were so striking that a preliminary report was made in 1908, and it was decided to push the work on a larger scale.

Through the courtesy of Mr. E. Plummer, the formula for the polyvalent vaccine

was submitted on the 2d of December, 1909, to Messrs. Parke, Davis & Co., who generously agreed to produce the vaccine, and placed their Biological and Research Department in Detroit at the writer's disposal.

Under the direct supervision of Dr. E. M. Houghton, of this department, and Dr. Seaborn, the polyvalent vaccine has been furnished in unstinted quantity to the writer and some other physicians for experimental use "without money and without price;" and they tender their hearty thanks with an expression of appreciation of the scientific and altruistic spirit evidenced by the generosity of Messrs. Parke, Davis & Co.

The method of using the vaccine was as follows:

Muscular injections with a Luer 1-Cc. syringe were preferred, as they seemed to be better absorbed than the subcutaneous ones, and were less painful. Vaccinations were performed as early as possible, to anticipate toxemia. The uniform dose was 0.5 Cc.

Where toxemia was already marked, the Murphy drip and catharsis were employed for the purpose of washing out the toxins.

Revaccinations were always made at four-day intervals, after experience had made it evident that the effect of the vaccine lasted with considerable regularity seventy-two hours.

It is to be remarked that no untoward local reaction was ever observed, save slight muscular soreness, which did not always obtain.

Very commonly the patients themselves would speak of a sense of invigoration, coming on twenty-four hours after the vaccination.

No clinical evidence of depression was at any time met.

Of seventy-five cases treated, thirty-five were erysipelas, eighteen puerperal sepsis, and twenty-two miscellaneous—*i.e.*, ruptured ectopic pregnancy with sepsis, suppurative salpingitis, deep phlegmon of arm and forearm, malignant endocarditis with embolic phlegmon on hand and gangrene, ischiorectal abscess with profound sepsis, cervical adenitis following Pfeiffer's glandular fever; aureus infection, appendectomy with sinus, salpingectomy with abscess anterior to bladder wall, mastoiditis, osteomyelitis. These cases were all in bad shape when vaccinated, and all did well after vaccination, excepting a case of septic pneumonia following a gunshot wound, and a case of malignant endocarditis with pyemia. Many of the cases were chronic alcoholics of the worst type.

Several unrecorded cases of puerperal septicemia were treated without result, where the patients were practically moribund, being swamped with toxins. In the thirty-five cases of erysipelas, two died, one being moribund on entering the hospital, the other a baby six months old, with phlegmon of the scalp covering three-quarters of its area. The temperature in this case fell to normal, but the patient died of exhaustion. The average duration of the remaining thirty-three cases was 4.3 days, which is 2.7 days less than Strümpel's lowest average. The earlier the treatment, the shorter the duration of the case after vaccination.

The author's analysis of these cases results in the following conclusions:

First, proper use of the polyvalent vaccine described above is not only harmless, but is also of positive value in many cases of infection.

Second, a stock vaccine containing virulent strains has the advantage over the autogenous vaccines of saving valuable time, and being available at any moment for physicians who lack the facilities for procuring autogenous vaccines.

Third, vaccination is useless, if the patient be already swamped with toxin. The only hope in such cases is to eliminate the toxin by catharsis and the Murphy drip, or, where the infecting organism is known, by the use of an antiserum in conjunction with the vaccine.

Fourth, early vaccination offers the best prospect of success.

Of the specific cases treated, the following may be remarked:

The effect of vaccination upon phlegmon is to increase the local reaction, often within a few hours. An incision which is sluggish will pour out pus with astonishing rapidity, and the tissues will assume a more healthy appearance. At the same time the temperature, which often rises at first, begins to drop and becomes normal, or nearly so. The pulse improves. In erysipelas, extension of the erythema is checked, the temperature drops, commonly on the third day, and the pulse improves. The skin blush often persists for some days after all other symptoms have subsided. In the writer's case the only local treatment used was a normal saline mask, to prevent dissemination of desquamated epithelium.

In puerperal sepsis the time to strike is the moment that it is clear that the case is one of sepsis. Little is to be expected in profound bacteriemia, and less when the patient is stupid with toxins; although two of the cases which were vaccinated for the late Dr. Charles Jewett did recover after a long siege of multiple abscess, in which the toxin was sufficient to produce marked stupor.

Aside from these graver cases, many others of a milder type of infection were vaccinated with almost uniformly good results—boils, furuncles, abscesses, acne vulgaris. In numerous cases of acute tonsillitis the results were ideal, the reaction often occurring within twenty-four hours.

THE CLINICAL USE OF SCARLET RED AND ITS COMPONENT AMIDOAZOTOLUOL, IN STIMULATING GRANULATING SURFACES.

In the *Johns Hopkins Hospital Bulletin* for July, 1911, DAVIS states he has been able to compare the rapidity of healing caused by scarlet red and amidoazotoluol. Following an extensive burn there were two granulating wounds of about the same size. One was dressed with 8-per-cent scarlet-red ointment and the other with 8-per-cent amidoazotoluol ointment. The healing in both was rapid, but the wound dressed with amidoazotoluol healed first. The character of the healing was practically the same.

The age of the patient seems to have little effect on the stimulating power of these ointments. The general health of the patient is most important, and in some instances forced feeding, fresh air, and tonics must be resorted to.

It is interesting that a number of patients with exquisitely painful ulcers have remarked that there is less discomfort after dressing with these substances than after any other dressing, however bland.

In none of the cases has the author noted the slightest irritation of the surrounding skin following the use of amidoazotoluol. Although this dressing can be used continuously without irritation, it is best to apply it for forty-eight hours and then alternate with some bland ointment for twenty-four hours.

Dressing with both substances causes excess of secretion for one or two applications, but there is marked drying up of the granulations in a short time.

The use of scarlet red and amidoazotoluol in blue ointment is advantageous in the treatment of syphilitic ulcers, and in addition constitutional treatment should always be employed. In the treatment of second-degree burns the ointment can be used immediately after the blisters have been cut away. In third-degree burns it is best to wait until the granulations have started.

For a time after healing the newly formed skin has a tendency to be dry and somewhat scaly, but this is easily overcome by the application of olive oil or vaselin.

In the author's experience he has not yet seen a wound break down which was healed by the use of scarlet red or amidoazotoluol, although some of the cases have been under observation for over two years.

A grayish membrane is often seen on the granulations after the application of scarlet-red ointment. This formation has not been observed following the use of amidoazotoluol.

Thiersch and Reverdin grafts are sometimes tremendously thickened following

early dressings with these substances, but this thickening disappears within a few weeks.

At times it is advantageous to apply either ointment directly to the wound and then expose to the sunlight and air.

Scarlet-red and amidoazotoluol gauze is prepared by saturating gauze with a 4-per-cent or 8-per-cent alcoholic solution of the substances and then allowing it to dry.

The substances can be used as a dusting powder by the addition of 4-per-cent to 8-per-cent strength to boric powder. The author has also tried the full-strength powder on a few wounds without irritation. The effect of the scarlet-red and amidoazotoluol used in this way is very rapid drying up of the wound and the formation of a tough scab under which the healing takes place.

A simple and satisfactory method of preparing scarlet-red and amidoazotoluol ointment is to rub up the substance with a small amount of almond oil until the mass is smooth, and then mix this mass thoroughly with the base.

Both these ointments can be sterilized without interfering with their stimulating properties.

As a rule there is no toxic effect either from scarlet red or amidoazotoluol. Gurbski reports the only case in which any general toxic effect was noted, as follows:

A child, eleven years old, was severely burned by an explosion of turpentine. The lower two-thirds of the thigh and the entire leg to the ankle were involved. After the granulations had formed Gurbski applied 8-per-cent amidoazotoluol ointment. Fifteen hours after the application the patient, who had previously been in very good health, began to complain of headache and dizziness. This was followed by violent vomiting and gastralgia. The pulse rose to 110 and was of low tension. The temperature rose to 102.3° F. There was cyanosis of the lips and albumin in the urine.

The dressing was removed and the patient placed on a milk diet. In a few hours all of these phenomena disappeared. Eight days later amidoazotoluol was again used, and these symptoms reappeared with the exception of the albuminuria. A third dressing five days later caused the same symptoms, except that the vomiting was less marked.

During the rest of the treatment he applied the ointment to only one-fourth of the wound at a time, and the toxic symptoms did not again occur. Rapid healing followed.

Gurbski thinks the poisoning was due to the amido group in the amidoazotoluol.

Davis asserts he has dressed very large granulating areas for some time with these substances without any deleterious effect.

In this connection an observation by Stoeber is of interest. He says that it is not uncommon to have bladder disturbances among the men who work in the manufacturing of dyes. This trouble is principally among the workmen occupied in the manufacture of amido combinations of benzol and naphthalin, or in factories where these products are used. The condition is characterized by cyanosis, vertigo and weakness, strangury, and bloody urine. In addition to the above symptoms, in long-continued handling of these dyestuffs, hemorrhages and tumor formations in the bladder are observed. None of these symptoms have been noted following the clinical use of scarlet red or amidoazotoluol, except as stated above.

The consensus of opinion is that there is no danger of producing malignant growths by the clinical use of these substances. The author's own experience has convinced him of this, and although occasionally there is an overgrowth of epithelium, this soon assumes the level and the appearance of the normal skin.

Some authors have gone so far as to state that by the use of scarlet red and amidoazotoluol the majority of cases of skin-grafting can be eliminated. This is too broad a statement, but there is no doubt that wounds can be healed by these compounds which could not otherwise be satisfactorily closed except by grafting.

Scarlet red and amidoazotoluol will not heal every wound, but in the majority of

cases, when applied with the proper technique, they will cause epithelial stimulation in the edges of the most sluggish wounds, and give a rapid healing which is stable and resistant, and which has the macroscopic and microscopic appearance of the normal skin. There is no tendency to subsequent contraction, and the skin becomes movable on the underlying tissues in a reasonable time. Any one of these characteristics makes the use of these substances well worth trying.

THE SIGNIFICANCE OF ABDOMINAL PAIN AND THE MALADMINISTRATION OF OPIUM.

NIFONG writing in the *Journal of the Missouri State Medical Society* for July, 1911, reminds us that the location of the pain is of much significance. We recognize now the classic McBurney's point in appendicitis; the pain and tenderness in the right hypochondrium of a cholecystitis or cholangitis; the deep gnawing epigastric pain of stomach cancer or ulcer; the acute, sudden pain of gall-stone colic; or the prostrative ilioinguinal pain of renal colic; or the hypogastric pain of distended urinary bladder. Also we must be cognizant of referred pains, such as pain in the right shoulder in hepatic affections; a tender point over the lower dorsal vertebræ in duodenal ulcer; pain in the thighs in intestinal and rectal troubles. Then, also, must be noted points of tenderness elicited by examination, as the well-known McBurney point in appendix troubles, or Rovsing's sign, which is pain at McBurney's point produced by pressure over the descending colon. Naunyn's sign of a sore gall-bladder is elicited by hooking fingers under ribs over the gall-bladder, and a deep inhalation is impossible if the gall-bladder is inflamed. Pain in the kidney may run down the ureter or to the testicle, while bladder pain may be in the end of the penis. Pain from pneumonia or pleurisy may be abdominal, especially in children.

Another point in the character of pain must be mentioned as important, viz., pain at the onset of disease may be diffuse and become local or *vice versa*. Pain in appendicitis is at first more frequently general and diffuse and later localizes; still later, after peritonitis begins, it becomes diffuse and general again. Ptomaine poisoning, on the other hand, produces pain well localized in the epigastric region, and later becomes general and diffuse without the signs of peritonitis. Intestinal perforation gives immediate local pain and later diffuse pain from spreading peritonitis. The relationship of vomiting in acute belly pain is also of importance. Sharp pain preceding the act of vomiting indicates peritoneal infection, while pain following the act of vomiting would point more directly to acute indigestion or ptomaines.

What a broad diagnostic field is the abdomen, and how carefully should we study not only the important symptoms of pain, but all the accompanying signs and symptoms in order to make a diagnosis! With all the data possible and the most careful study it is oftentimes quite impossible to diagnose accurately, differentiation being so difficult. Is this sudden, severe, deep, epigastric pain, prostrating the patient and making him look so pinched, and anxious, and fearful, a plain bellyache or an acute hemorrhagic pancreatitis, a perforating duodenal ulcer, or a mesenteric thrombosis? Let us have a care when we say a man has only a severe bellyache. A diagnosis of dropsy is more creditable, for there are fewer conditions causing dropsy than abdominal pain. Let us have a care about seeing a patient with acute epigastric pain and diagnosing acute indigestion from inspection only. Remember that a majority of cases of appendicitis begin in just this way.

Even more careful, if possible, we should be when seeing a case of severe abdominal pain with vomiting. Look for hernia, volvulus, bands, or other causes of ileus. Many conditions might be mentioned producing similar pictures. Usually, however, some factor is present that makes it possible to make at least a near diagnosis. Now, when we think of pain being produced by such a variety of conditions, and many of

them so grave, it surely ought to stimulate us to be very careful and cautious in interpreting their meanings. We should at least recognize the fact that abdominal pain is a signal of abdominal distress and nature's method of warning us of approaching danger. It is the herald of disaster, the Paul Revere of a revolution oftentimes.

Such being the case, the author here enters his protest against the too frequent use and bad administration of opium in abdominal diseases heralded by pain. It is dangerous for a physician to cover pain signals with a heavy fog of opium, just as dangerous as for a railroad switchman carelessly to extinguish his red danger-signal when the train is approaching wreckage. The author says this advisedly and conscientiously, after long experience in witnessing just such wreckage due to thoughtlessly putting out the danger-signal of pain. He pleads for a more careful diagnosis; and if diagnosis is impossible, we can at least satisfy ourselves by careful and thorough examination whether the case is of gravity before producing the ever-ready hypodermic syringe.

He urges a careful examination of every belly case, for we cannot be too careful. What may seem an attack of indigestion, of no serious consequence, often may prove to be a case of seriousness; and failure to diagnose early may delay recovery or greatly jeopardize life. Also it is not fair to your counsel to call him to your opium-benumbed patient and thus handicap him in making a diagnosis. He has not the same evidence you may have had in the beginning. Why benumb with morphine the acute appendix case, making it difficult to diagnose and difficult to get consent to operation because the patient is easier, thus losing precious time and allowing perforation and peritonitis to intervene? That is bad, but what is worse is the physician who has the moral obliquity or the asininity to administer morphine repeatedly to a young woman with dysmenorrhea. That does not immediately jeopardize her life, but its repeated use does destroy her health and happiness and the happiness of those dear to her.

But is there no use for opium? Indeed, it is a most beneficent and God-given drug, and its wise administration is to be commended. It should be used to alleviate pain on every occasion that it can be wisely used. Used in some cases of appendicitis *after* we have made a diagnosis and given proper advice, it is valuable, and likewise in many other troubles producing suffering. And best of all for euthanasia let us have it. For the poor, hopelessly doomed sufferer from malignancy, God has given it us for his comfort, and let us kill his racking, torturing pain. Even more—let us give him dreams of the beautiful, of Elysian fields, of mirages sublime, and renew them as often as they fade.

A SIMPLE METHOD OF PURIFYING ALMOST ANY INFECTED WATER FOR DRINKING PURPOSES.

In the *Journal of the Royal Army Medical Corps* for July, 1911, NASMITH and GRAHAM describe this method as follows:

1. Take a teaspoonful of chloride of lime, containing about one-third available chlorine, and remove the excess of powder by rolling a pencil or other round object along the top of the spoon, or by flattening it with a penknife blade, so that the excess will be squeezed off.

2. Dissolve the teaspoonful of chloride of lime in a cupful of water, making sure that all lumps are thoroughly broken up, and to it, in any convenient receptacle, add three more cupfuls of water.

3. Stir up the mixture, allow to stand for a few seconds in order to let any particles settle (this stock solution if kept in a tightly stoppered bottle may be used for four or five days), and add one teaspoonful of this milky stock solution to two gallons of the water to be purified in a pail or other receptacle. Stir thoroughly in order that the weak chlorine solution will come into contact with all of the bacteria, and allow to stand for ten minutes. This will give approximately one-half part of free chlorine to a million parts of water, and will effectually destroy all typhoid and colon bacilli or other dysentery-producing bacilli

in the water. The water will be without taste or odor, and the trace of free chlorine added rapidly disappears.

The writers have followed this procedure repeatedly, using only the simple apparatus mentioned, consisting of a teaspoon, a cup, and a 2-gallon pail. The water in the pail has been inoculated with typhoid and colon bacilli, and examined before and after chlorination. The result was invariably the same—namely, that all typhoid and colon bacilli were destroyed.

No.	Lake Ontario water. Bacteria per Cc. at 20° C.	Lake Ontario water+typhoid bacilli. Bacteria per Cc. at 37° C.	Lake Ontario water+typhoid +1 part chlorine per million. Bacteria per Cc. at 37° C.
1	92	2,144	1
2	84	26,100	1
3	176	15,000	6
4	154	17,000	2
	Substituting	colon bacilli for	typhoid —
5	65	95	0
6	132	2,250	1

This method is also applicable to the sterilization of wells which have been infected, provided, of course, that the source of the infection has been removed. It would obviously be futile to sterilize a well situated in a farmyard from which organic matter and bacteria are constantly draining into the well.

If one knows the diameter and depth of the water in the well in feet, the amount of chloride of lime may be easily estimated. For instance, the writer wished to destroy the bacteria in the well at his summer cottage, the well being 6 feet wide by 4 feet deep. The formula would be radius squared $\times$ 22/7 $\times$ depth of the water $=3\times3\times22/7\times4=113$ cubic feet of water in the well. One cubic foot contains 6¼ gallons of water, so that there were $113\times6\frac{1}{4}$=about 700 gallons of water in the well.

One and a half pounds of chloride of lime to 100,000 gallons will give roughly one-half part of available chlorine in a million parts of water, or 1 pound to 66,000 gallons. Therefore, $700\div66{,}000\times16=1/6$ ounce chloride of lime was necessary to purify the well. The chloride of lime was mixed with water, diluted, and poured into the well, and then thoroughly mixed by plunging a long pole with a couple of strips of wood nailed across one end up and down in the water. The water before chlorination contained 950 bacteria per cubic centimeter with colon bacilli present; after chlorination there were only nine bacteria and no colon bacilli.

TETANUS TREATED WITH INTRASPINAL INJECTIONS OF MAGNESIUM SULPHATE.

In the *Australian Medical Journal* of June 20, 1911, GARDNER records a case treated in this manner.

The attention of the author had been directed by Dr. A. J. Wood to an article in the THERAPEUTIC GAZETTE. In this article Fox laid stress on the liability to respiratory failure after intraspinal injection of magnesium sulphate. But in this case the general rigidity was so intense, opisthotonos so marked, and the general condition seemed to be becoming so much worse, that Gardner decided to continue the injections, and no further alarming symptoms resulted. The patient for about fourteen days was in a semiconscious condition. He would not answer questions, and at intervals would utter a peculiar, loud, piercing cry, even when the muscles were not rigid. The rigidity gradually lessened, and the patient was discharged to the Convalescent Home a little over six weeks after admission. He could walk without assistance, though there was a good deal of stiffness of the legs, the extensor muscles being affected. He was seen a month later, and was quite normal in every way.

Before reviewing the question of the use of magnesium sulphate, it is to be noted that the patient also received some additional treatment—160 Cc. of antitetanic serum given subcutaneously, most of it during the first five days after admission. It was then discontinued, and again given on the twenty-first and twenty-second days.

On the fifteenth day his condition was still very bad. The temperature was still very high, so it was decided to add to the

treatment subcutaneous injection of carbolic acid. This treatment for tetanus has been tried extensively, especially in Italy, though, except in the latter country, the reports as to its efficiency are not very favorable. Phenol is believed to have a specific action on the tetanus toxin, and tetanus patients possess an extraordinary tolerance to the administration of it. Ten minims of a 2-per-cent solution were injected three-hourly, the dose being increased to twenty minims by the fourth day. This was continued for five days in all. The patient stood the injections very well, and there was no evidence of phenol poisoning. The author is not prepared to say that there was any marked beneficial effect or otherwise. The temperature during the attack was of an irregular septic type, 105° being the maximum, reached on the eighth day, and 104° being reached on three other days. The pulse-rate varied within wide limits—64 minimum and 160 maximum. Respiration 8 to 48.

In reference to the use of magnesium sulphate, Fox, in a paper on treatment of tetanus, gave a list of all cases reported in the literature treated with intraspinal injections of magnesium sulphate.

In the series of twenty-four cases the mortality was only 46 per cent. In sixteen of the cases the incubation period was under ten days. These were termed acute, and the mortality was 50 per cent. In the more chronic cases (eight) the mortality was lower. In only two cases was there given over eight injections. One was a boy of seven. Incubation period seven days; eleven injections; three cubic centimeters maximum dose. Serum and sedatives also given. Recovery. The other boy was aged eight. Twenty days' incubation; twelve injections; two cubic centimeters maximum dose. Recovery. The dosage recommended is 1 Cc. for 20 pounds body weight. Four cubic centimeters was given as the maximum dose for an adult, but the case under review was getting 4 Cc. in nearly every injection.

Fox refers to these disadvantages: Excessive secretion of bronchial mucus and danger of respiratory paralysis. Both these symptoms presented in this case, the patient almost dying of respiratory failure on at least two occasions, as before noted; and there was for a great deal of the time a loud mucous rattle, which was rather disconcerting. He also mentions incontinence of urine; but retention was noticed in this case on two occasions.

The advantages of this form of treatment that the writer found are: The patient's strength is conserved and continuous use of depressant drugs avoided. Intense muscular action is abolished, with accompanying skin action and pain. The patient can be fed by the mouth. Saline can be administered with ease and success. The author asserts he has formed the highest opinion of the value of the sedative action of the magnesium sulphate injected intraspinally, and feels convinced that this patient could have been saved by no other means. Though the symptoms were so intense as to daily threaten the life of the child, the writer cannot say whether the infection could be termed acute, because the incubation period is not known; but so far as he could judge, the mortality in very severe cases is much the same whether they be acute or chronic.

EXCESSIVE LOCAL PERSPIRATION.

PIRIE in the *Lancet* of August 12, 1911, says that his attention was first directed to this subject about five years ago, when he noticed that after a long-continued series of sittings under *x*-rays the patient ceased to perspire on the part treated. Since that time he has had twenty cases of excessive perspiration to treat. Nine of these have been qualified medical men. In every case which has been fully treated the rays have produced their effect on the sweat glands, and either entirely stopped their action or reduced it to less than normal.

The parts treated have been the face, 2 cases; armpits, 10 cases; hands, 9 cases; and feet, 1 case. One case included hands, face, and armpits. In two cases a cure was got after only two applications, and no

more sittings were given, but usually from three to five have been required. The number of treatments required depends on the dose given. In the two cases which were cured by two sittings both suffered from the effects of too large a dose of *x*-rays (pain, irritation, blistering, and redness), and since these two cases the others have been done by the longer method. The author believes six sittings of one-pastille dose each at intervals of one month is the best treatment, as it causes absolutely no discomfort and the patient runs no risk.

The rationale of the treatment is as follows: When an *x*-ray photograph of the thigh is made the negative shows the bone lighter in color than the surrounding tissues, because the bone, being denser, has absorbed more *x*-rays than the surrounding tissues. Looking at a normal cell and at a karyokinetic cell, we see that in the latter the chromatic filaments are more condensed, and these denser filaments absorb more of the rays than the normal cell does. There is a limit of *x*-rays which has no effect on a cell. More *x*-rays will stimulate the cell, still more will damage it, and still more will destroy it. The greater absorptive power of the karyokinetic cell to *x*-rays makes it more vulnerable, so that the dose of *x*-rays which will just not kill a normal cell kills a cell undergoing division. The dose required for this is a little more than a pastille dose, so that by giving one pastille each month for a period of six months the karyokinetic cells (especially those of slow growth) are destroyed. This principally affects the hairs, sebaceous and sweat glands.

The writer has had the opportunity of having a piece of skin so treated examined in the Pathological Laboratory at St. Bartholomew's Hospital, and many sections cut from it were examined. The report states:

"April 28, 1911. Examination required: skin after treatment by *x*-rays. Pathological report: The skin was very difficult to dehydrate. On section it appeared normal as regards the epithelium, except that the cells were difficult to stain and much keratinized. No hair follicles, sebaceous or sweat glands found. The tissue underlying the surface epithelium was composed of dense fibrous tissue."

Kolipinski has reported one successful case of hyperidrosis axillæ treated by the thermocautery. The result was got by producing burns of the second and third degree. Major F. J. W. Porter, R.A.M.C., recommended dissecting away the skin of the axilla in order to stop perspiration. No other method but these and *x*-rays have been found efficacious in stopping perspiration. Drugs are useless as a permanent cure.

In treating the hands or armpits the writer asserts he gets all parts of the surface of the skin equally exposed to the rays by means of a delivery tube which has a firm base of celluloid. The celluloid is a part of a sphere whose radius is 24 centimeters. The source of the rays is placed at the center of this sphere and the hands are pressed firmly against the celluloid. Thus all the parts of the hands which touch the sphere are exactly 24 centimeters distant from the source of the rays. A barium platinocyanide pastille is placed 12 centimeters from the source of the rays and another pastille is placed on the hands. The dose can thus be measured by Sabourand's method and at the same time by the control on the skin. Another control the author uses at the same time is the milliampere minute method with a water meter. The celluloid absorbs a small quantity of rays, and he trusts mostly to the pastille on the skin and looks on the other two methods as controls.

Pusey in 1903 and Bulkley in 1904 reported cases of hyperidrosis in the axilla which were improved by *x*-rays. Engmann was the first to recommend the application of a dose which would produce an erythema. Lanari recommended in treating the palms of the hands that the surface should be divided into four areas and each area treated by itself. The dose to each area he recommends is 8X—*i.e.*, nearly two pastille doses—so as to produce redness, swelling, and skinning. The skin is shed in large flakes, leaving red, smooth skin

underneath. The skin becomes normal after several weeks. He considers one such application sufficient for a permanent cure, and reports a perfect result in one case a year after the treatment. In one case in which the author carried out this treatment the perspiration was not checked. In his other two cases such a dose had the desired effect, but caused much discomfort, and he does not recommend so large a dose. Stover in 1905 and Kromayer in 1907 reported cases of hyperidrosis treated by *x*-rays.

[It is not to be forgotten that a dilute solution of formaldehyde makes a useful application in these cases, and an easy and agreeable method of using this drug is in the shape of euformol.—Ed.]

MENORRHAGIA IN VIRGINS: A MEDICINAL TREATMENT.

Francis Hare, of London, says in the *British Medical Journal* of July 15, 1911, that the conception that excessive menstrual losses may depend upon exaggerated vascular tone broadens the etiological basis of menorrhagia. While not forgetting the undoubted influence of local lesions and general diseases, we have to include amongst probable causes all the factors of exaggerated and impulsive (inadequately inhibited) vasomotor action—a series of factors too long to be here considered. Meanwhile, we may work on proximate factors. From the fact that exaggerated general vasoconstriction increases the menstrual loss, it follows that a reduction thereof will diminish the loss; whereupon we at once think of the nitrites.

The effect on menstruation of an inhalation of amyl nitrite, the most rapidly acting of the class, is in strict accordance with, probably exceeds, anticipation. Synchronously with the flushing of the face, the clinical index of inhibition of the general vascular tone, the flow ceases; nor does this return until the next period, unless the inhalation has been administered during the first day or two of the process. In several cases a single administration of 3 minims on three or four successive menstrual periods has been sufficient to effect permanent relief from the tendency to excessive losses. In others the effect has been temporary only. In these latter it has been necessary, and usually sufficient, to give during the menstrual period a regular course of nitroglycerin, according to the practice recently advocated by Gowers in his article on "Vagal and Vasovagal Attacks," in the *Lancet* of June 8, 1907.

It is superfluous to add that the success of the nitrites in menorrhagia should never lead to the neglect of local conditions. But these, of course, are quite frequently not examinable.

THE TREATMENT OF MELANCHOLIA.

Robertson in the *Journal of Mental Science* for July, 1911, says that in melancholia the disorders of the gastrointestinal tract must receive the first attention, as so much depends on proper alimentation. Indigestion and constipation are usually present, with the absorption of putrefactive substances from the bowel, for the ethereal sulphates can be demonstrated in the urine. The result of these is that the patient suffers from malnutrition, and becomes thin and anemic, with a muddy complexion. It may be necessary to wash out the stomach. Calomel should be given, and the bowels should be periodically purged. Intestinal antiseptics may be also given, and the lactic acid bacillus treatment has done well in some cases.

If attention be given to the alimentary system improvement often follows immediately, and the first sign of this is a rise in the patient's weight. In a disease which is possibly metabolic, and in which there is almost always disordered nutrition, there can be no more accurate test of improvement than this.

Among the faults of omission which form the symptoms of disordered conduct in melancholia one of the most important is the neglect and refusal of food. This must, of course, be overcome, and in the first place the patient should be coaxed. If

coaxing will not do, the nurse must force the patient, and if this be impossible, then the patient must be fed by means of a stomach-tube or nasal tube. Many patients suffering from melancholia gradually starve themselves, and a practical point of great importance is this—that it is not the patients who refuse all their food who starve. When this happens those in charge of the patient are so alarmed that artificial feeding is adopted practically at once. In one instance a patient had not had food for nearly a fortnight. The patient who is most likely to starve is one who has for a prolonged period taken only a mouthful or two at each meal, but has never absolutely refused. As something has always been taken, it is assumed that enough has been taken to keep body and soul together. Such cases are those most likely to starve, and whenever they begin to refuse food a daily chart should be kept, and the patient should be weighed weekly. It is perhaps not generally known that it is possible to tell whether a patient be starving or not by the sense of smell. Whenever the carbohydrates in the body are used up, there is the production of acetone, and the sweet distinctive odor of this substance can be smelled in the patient's breath.

The overfeeding of melancholic patients was at one time practiced, but it is obvious that if the function of digestion be disordered, extra work should not be thrown on the stomach. Moreover, a patient is not fattened by the amount of food that goes into his stomach, but by the amount that is digested and assimilated by him. Milk is by far the best food, and as there is a tendency to putrefaction in the intestines, nitrogenous food should not be given at first.

The next symptom to receive attention is sleeplessness, and there are very few in the early stages who do not suffer from insomnia. Natural means should of course be tried in the first place to overcome this, such as the open air, moderate exercise, a quiet room, etc. If these fail, the two best hypnotics to use are paraldehyde and potassium bromide.

Paraldehyde is a perfectly safe drug. Two drachms may be regarded as a standard dose in the insomnia of melancholia, and it can be dissolved in 2 ounces of cinnamon water. As it acts as quickly as alcohol does, it should not be given until the patient is in bed. Its action can be assisted and prolonged by the administration of potassium bromide in doses of 30 grains to 2 drachms. In the larger doses it should not be given continuously, as it has a tendency to accumulate in the system. In the experience of the author, veronal, of the newer drugs, while sometimes producing giddiness, unsteadiness of the gait, headache, and sickness, has been the most useful. In some cases of melancholia the blood-pressure is high, and sleep will not be obtained till this symptom has been treated.

The third symptom needing treatment is the tendency to suicide, and this is, of course, done by means of continuous supervision exercised by skilled mental nurses over the actions of the patient. The nurses are also expected to amuse and interest the patient, and if by their attention and sympathy they win his confidence, they become therapeutic agencies of great value.

TRACHOMA TREATED WITH CARBON DIOXIDE SNOW.

In the *British Medical Journal* of July 15, 1911, HARSTON gives the results obtained by this method of treatment in fifty cases of trachoma.

The snow is collected from a 28-pound cylinder of the liquefied gas by means of a Prana cage. The cage is then detached from the cylinder and the snow is rammed down tightly into the cylindrical mold attached to the cage. The author then hammers down the snow in the mold to compress it as much as possible, and to facilitate subsequent shaping of the resulting pencil. The pencil is now extruded with the stick provided for the purpose, and subsequently shaped with a blunt knife into the form of a sharpened pencil, the sloping point being made as long as possible, but thick enough to avoid fracture when ap-

plied to the everted conjunctiva. This is an important point, as considerable pressure has to be applied to secure the maximum of efficiency. The surgeon stands behind the patient and everts the lids in the ordinary way; holding the lids everted with the fingers of the left hand, he takes up the pencil of snow with the right hand and applies it to the conjunctiva, taking care to avoid contact with the cornea, and at the same time directing the patient to look down as much as possible, so that the snow may be applied to the transitional fold of conjunctiva in the fornices. After treating the fold of transition the snow is applied to the tarsal conjunctiva, an interval being allowed to elapse so that the effect may pass off from the fornices before applying any pressure on the tarsal conjunctiva. The reason for this will be easily appreciated by the surgeon should the patient inadvertently raise the eyeball; the cornea is then apt to come into contact with the excess of snow deposited. Pain immediately ensues, and blepharospasm naturally follows, markedly exaggerating the discomfort of the patient. In the same way, after applying the snow to the tarsal conjunctiva, an interval is allowed to elapse before replacing the everted lid.

At the first application the snow is applied to each part for fifteen seconds; later, when the patient is accustomed to the treatment, for as long as twenty, twenty-five, and thirty seconds. The pain caused passes off at the end of two minutes, and is infinitesimal compared to the pain caused by bluestone, silver nitrate, and such like caustics. The disease is considerably shortened in its course, and the resulting scarring is much less than when other caustics have been used. In his series of cases the applications were made once weekly. Provided Nowman's membrane is intact, pannus and corneal ulceration clear up rapidly in the majority of cases. The worst cases to treat are those of acute trachoma, with much edema of the lids and conjunctivæ and much purulent secretion. The cases which respond most rapidly are those which have already become chronic, with slight discharge, and with slight scarring—that is to say, those cases in which nature has already attempted a cure. Of the papillary and granular types of the disease, the latter is, in the experience of the author, the more readily amenable to the treatment with snow.

ADMINISTRATION OF SERUM BY THE MOUTH.

CUMBERLEGE, in the *British Medical Journal* of July 15, 1911, has this to say in favor of this plan:

First of all with regard to efficacy, the author states he has always found results of its action within a few hours after being given, and even if hypodermic injection is more speedy, so long as the infection is not of many days' duration an hour or so difference can surely matter little, and that results are quick and good is borne out by the two cases he mentions.

As to dosage, he believes it is customary in hypodermic injections to give many thousand units on the supposition that, owing to possible untoward results arising from the serum, it is better to get it all in at once.

Given by the mouth a far smaller dose is required, and he has never given more than 4000 units at a time; a dose of 2000 units, followed up, if necessary, by a further dose, is the usual amount given.

Again, the chief cause of death is due to heart failure, owing to the effects on the muscle of the diphtheric toxins. As diphtheria is chiefly a disease of childhood, the pain caused by and fear of the needle usually means a struggle with the patient, and consequently there is an always present risk of too much strain upon the heart. Given by the mouth this risk is entirely obviated, and if given in a little water it seems to make a quite palatable mixture which young children take without any difficulty.

By giving it in this way, too, it is possible to give continued dosage by making into a mixture and ordering it to be given every two or four hours as the case may be. Shortly after giving the serum there is in

most cases a diaphoresis and fall in temperature and pulse-rate, and also the patient falls into a deep sleep. Both these results have been noticed by the author when giving serum other than diphtheric without discerning whether the serum itself could have any narcotic effect, or whether it was due to the fall in temperature and rapid neutralization of toxins.

With regard to the action on serum by the gastric juices he is not able to speak, not having had any opportunity of making chemical tests; but whatever the action may be, results seem to point toward no harm being done to the serum, whether given after food or on an empty stomach.

Another point in favor is that no patient treated by him by mouth has shown signs of serum sickness, whereas either a rash or joint pains, or both, have nearly always occurred after the few cases injected. It has been stated that serum causes paralysis, and if that is so, mouth treatment in that respect is no better and no worse than by injection, for it does occur, but practically only after bad cases, which probably but for serum would have died.

[However plausible these opinions may seem we still believe that the hypodermic method is decidedly the one of choice.—Ed.]

THE TREATMENT OF ILEOCOLITIS.

Bonner in the *Milwaukee Medical Journal* for July, 1911, in discussing this topic says that medicines play only a secondary part in the treatment of acute ileocolitis, and although of secondary importance are essential in the successful management of the disease; but we should never drug such patients if we wish to cure. At the outset of the disease a brisk purge is indicated, consisting of either calomel or mercury with chalk, to be followed with a full dose of castor oil. The purge may be repeated once, but no more, because the second dose accomplishes all that can be done by purging. After the second dose, if it is necessary for the bowels to move, castor oil will fill all the requirements.

It is necessary to go back to the origin of acute ileocolitis to discover the object of administering purges. Acute ileocolitis is invariably the result of some error in the diet of the child, consequently we give the purge to empty the gastrointestinal tract of the offending substances. The subsequent exhibition of castor oil is also to assist nature in ridding the alimentary canal of the toxins that are formed as a result of this error of diet. Whenever the stools continue profuse after this treatment, irrigation of the colon is necessary, and the irrigation should be repeated occasionally if the diarrhea continues. Frequent and indiscriminate irrigation of the colon is to be condemned in the strongest language, as such a method of treatment causes more trouble than the disease itself. If at the end of the second or third day the diarrhea does not show signs of improvement, the writer invariably begins the use of bismuth notwithstanding the condemnation of many eminent men of its use at this stage. Bismuth has been the sheet-anchor in the treatment of gastrointestinal trouble for generations, and the writer's experience with it has not been disappointing. When bismuth fails, he asserts he has never found anything that he could substitute that would even do as well. The greatest fault with the majority of practitioners is that they do not give it in sufficiently large doses, and for that reason fail to get the desired results. On this account, bismuth receives a large amount of unmerited discredit. The author's plan is to give the subnitrate of bismuth in doses of fifteen grains every hour or two to a child of one year and to increase the dose to as much as thirty grains for a child two years of age. He can see no possible objection to the administration of bismuth for the diarrhea in the acute stage, as it seems to be clearly indicated. Bismuth has a double action, in that it is an astringent and it also has a mechanical action in forming a protective coat over the inflamed and irritated mucous membrane of the intestines, thereby allowing these affected parts sufficient time to recover. Bismuth, except for its feeble astringent action, is an inert drug so far as

toxic symptoms are concerned, and for that reason the author sees no possible objection to the administration of large doses. A good vehicle in which to exhibit the subnitrate is mucilaginous cinnamon water. Cinnamon water is a carminative, and, as there is usually tympanites coexistent with the other symptoms, is indicated.

The large majority of these patients will be usually convalescent in a short time, and the return to normal diet should then begin —gradually increasing the diet until the child is taking the usual food. These patients should receive the most careful attention as to their diet for the next few months in order to prevent any error in diet, as they are prone to have a relapse upon the slightest indiscretion in their feeding.

CARBON DIOXIDE SNOW AS A SKIN ANESTHETIC.

HERNAMON-JOHNSON writes to the *Lancet* of July 8, 1911, that whether we be physicians or surgeons, workers in vaccines or electrotherapeutists, none of us can in these days afford to ignore the hypodermic syringe. Yet some nervous patients dread the needle almost as much as a major operation. Considering the formidable appearance of some of these instruments, and their oftentimes more than doubtful sharpness, this alarm is not altogether unreasonable. In the past pure carbolic acid and the ethyl-chloride spray have been much used as a means of dulling the pain of the needle-prick. To rely on them absolutely, and to promise a patient that no pain will be felt, is, however, to risk being subsequently told that the truth is not in you. But if the skin is first frozen for from five to ten seconds with a pencil of CO_2 snow, the immediate insertion even of a large needle produces no sensation whatever. In the case of healthy skin and subjacent tissues the method is infallible, but it should be remembered that, say, in the case of an abscess, the mere pressure necessary to effect ingress will cause some amount of pain. By this means sera, vaccines, radium emanation, and the like can be injected into the most cowardly. The writer states that had he no other use for his CO_2 apparatus he should consider it well worth the money as an adjunct to hypodermic medication.

SYPHILIS TREATED WITH SALVARSAN.

EDGERTON in the *Interstate Medical Journal* for August, 1911, says that in all his experience with syphilis he has never found any drug which heals the syphilitic symptoms so rapidly and so satisfactorily as salvarsan. When we realize that the chancre, the mucous patch, and condylomata lata are in the majority of cases healed over in forty-eight hours, and as these are the active carriers of the contagion, we will readily agree with him that the spread of syphilis will be greatly diminished by the use of this drug.

From his experience he believes that a second injection should be given practically to every case, and that this should be given within three weeks after the first, except in those cases in which following the first injection there have been some bad after-effects.

The author prefers the intravenous method of giving the drug because the disappearance of the symptoms seems more rapid, there is no pain or any local irritation at the site of the injection, and the effects of the salvarsan have proved to be more lasting and the recurrences less frequent.

As to the absolute certainty of the cure, sufficient time has not elapsed to justify the conclusion that one or even two or three injections of salvarsan will prevent recurrences of the disease either of the secondary or tertiary lesion. Time alone will tell.

MECHANICAL CONTROL OF PNEUMOTHORAX.

DAVIS (*British Medical Journal*, July 8, 1911) describes and illustrates a new apparatus for the mechanical control of pneumothorax during operations on the chest. As a preliminary to the consideration of this problem he regards an understanding

of the elementary mechanism of respiration as essential. The respiratory movements are not concerned merely with the single function of the aeration of the lungs, but contribute a factor essential to the normal maintenance of the pulmonary circulation and of considerable importance to that of the systemic. There are certain pronounced differences in the mechanics of the pulmonary and systemic circulations. The latter consists essentially of a pump driving blood under high pressure into an elastic reservoir, the arteries; and the current of blood is mainly influenced by variations in the elasticity of the latter effected through the vasomotor apparatus. The pulmonary circulation, on the other hand, consists of a pump driving blood under comparatively low pressure into a reservoir, the lungs, which is constantly varying in size with respiratory movements. This variation, moreover, in its effects on the circulation is an active one, drawing blood into the lungs during inspiration and expelling it during expiration. Thus the pulmonary circulation may be regarded as made up of two parts, each of which is in active pulsation, the ventricle impelling the blood onward with the rapid pulsations of the cardiac rhythm, while the lungs contribute the slower but more voluminous impulses of the respiratory cycle. It should be clear from the foregoing that interference with the pulmonary circulation will be produced by collapse of one lung, and that although this lung might have its aerating capacity restored by mechanical inflation, the embarrassment of the pulmonary circulation would still remain unless the normal respiratory movements of the lung were reëstablished.

As long ago as the middle of the sixteenth century Vesalius recognized the possibility of aerating the blood after the chest had been opened by passing a continuous current of air through the lungs.

Mechanical respiration, as is of course well known, has been used for a long time, and extensively in experimenting on animals for the inflation of the lungs when it is required to open the chest. It has proved of great value by lowering the high mortality that must necessarily result if the operations are carried out with the lungs collapsed and an uncompensated pneumothorax present. That the method is in itself the cause of a small percentage of the deaths that result from the experiments is not a sufficiently great objection to outweigh its advantages. But in human beings such a danger must necessarily be an absolute contraindication.

By means of mechanical respiration the lungs are rhythmically inflated by a current of air blown into the trachea and respiratory undulations in the arterial pressure are still produced. But the effect of the inpumping of the air in mechanical respiration (the substitute for inspiration) is exactly the reverse of that of a normal inspiration. In the latter, after the initial fall of blood-pressure, there is a steady rise during the rest of inspiration, and continued into the beginning of expiration, and this is succeeded by a fall which continues until the next inspiration has begun. When the lungs are inflated mechanically, the intrathoracic pressure is increased instead of decreased, and the arterial pressure, after the initial rise, falls. Thus mechanical respiration reverses the normal influence of the respiratory movements on the pulmonary circulation. Such a reversal of the normal process is at least undesirable, seeing how delicate the respiratory mechanism is known to be in many during anesthesia. Mechanical respiration produces a condition of apnea, and it is conceivable that the additional effect of the toxic influence of chloroform might prevent the centers from resuming their normal activities.

Further, interstitial emphysema is a not infrequent sequela of mechanical respiration.

The grave symptoms which follow when a large opening is made in the chest wall are not, however, entirely due to the loss of the physiological function of the lung; they are in part the result of the pathological complication of an open pneumothorax.

Garre has shown that an opening in the chest wall produces no serious consequence

in itself so long as the size of that opening is less than the size of the glottis. Air enters the pleural cavity with each inspiration and the lung collapses gradually, but this collapse is neither complete nor maintained. The lung by virtue of its elasticity is greatly reduced in size, yet with each inspiration and expiration there is some slight alteration in volume, and during forced expiratory efforts—for example, coughing—some of the air from the sound lung is forced over into and expands the collapsed lung. The amount of movement in the lung, though not great, assists in the maintenance of the pulmonary circulation and in the aeration of the blood passing through the collapsed lung, and further, the size of the thoracic opening is not sufficient to allow the mediastinum to flap to and fro. But when a large opening is made through the chest wall the lung at once collapses and the alarming symptoms of an uncompensated pneumothorax at once appear and progress to a fatal termination. Garre attributes the symptoms of an uncompensated pneumothorax—cyanosis, dyspnea, and rapid irregular beating of the heart—to the flapping to and fro of the mediastinum and its contents, the heart, and large vessels, etc., with each inspiration and expiration. This to-and-fro flapping occurs as the result of the negative pressure between the pleural surfaces of the unaffected lung and the atmospheric pressure on the mediastinum, which is not a rigid body. During inspiration, therefore, since the pressure in the sound lung is less than atmospheric, the mediastinum is pushed across to that side, but during expiration the intrapulmonary pressure is greater than atmospheric, and so the mediastinum is pushed back toward the affected side.

Sauerbruch, on the other hand, considers that this is not the most important cause of the cyanosis and dyspnea of an uncompensated pneumothorax, and attributes these phenomena to the alterations in the pulmonary circulation produced by collapse and loss of movement of the lung.

The alveolar vessels dilate as they are no longer compressed by the difference between the intrabronchial and pleural pressure, and are easily distensible by virtue of their elasticity. These changes result in a considerable increase in capacity of the blood-vessels of the collapsed lung, the presence of which increase has been also demonstrated by injections and by the estimation of oxygen in cases of unilateral lung collapse due to an open pneumothorax.

It is to this hyperemia of the collapsed lung that Sauerbruch attributes the dyspnea of an uncompensated pneumothorax. The lung on the unaffected side is still able efficiently to aerate all the blood that passes through it, but as the result of the collapse of the other lung, and the associated increase of the size of the vessels, more than half the blood in the pulmonary system circulates through that lung and returns to the heart unoxygenated; there is a rapid increase of the carbonic oxide in the blood which, stimulating the respiratory centers, produces the dyspnea.

The author states that his reason for designing a new type of hyperatmospheric apparatus is incident to the recognition of the necessity of being able to do intrathoracic operations without the constant anxiety of the risks of an uncompensated pneumothorax. He has used his apparatus in both animals and man, with complete success. The lungs are kept properly distended, the movements of inspiration and expiration continue unaltered, the pulse remains good as regards quality and frequency, the blood-pressure is maintained, and there has been no trace of dyspnea, even though the chest has been widely opened for one and a quarter hours in man and two hours in animals. By this apparatus the pressure of the air remains constant, yet can be altered at will. The pressure of air is regulated in both the expiratory and inspiratory circuits. The machine is extremely simple in its working and the anesthetist can reach and control every part of the apparatus with his right hand, the left being sufficient to steady the patient's head and the intubation tube. There are no motive forces such as motors,

which may fail at any moment. The cost is about two-thirds that of the Brauer Ueberdruck. It is capable of transportation and may be used in any theater or operating-room. The main features of the machine are: The air chamber working on the principle of a gas holder and fed from compressed air and oxygen cylinders. The air in this chamber is at a greater pressure than that required in the bronchial tubes, but after it leaves the chamber passes through a governor and the pressure is there regulated to the required amount; it then passes through Alcock's chloroform box, then through a heating chamber, and so into the trachea by an intubation tube. The expired air leaves the trachea again by the exit pipe of the intubation tube and enters the expiratory chamber, where the pressure is again regulated by a weight valve.

THE END RESULTS WHEN HYSTERECTOMY HAS BEEN DONE AND THE OVARY LEFT.

Polak (*Surgery, Gynecology and Obstetrics,* July, 1911) has investigated the end results in a series of 132 abdominal hysterectomies in which one or both ovaries or part of an ovary were conserved. He compares this analysis with one of a like number of patients with double salpingo-oöphorectomy. For the past five years his technique has been to remove the uterus, well below the internal os, between clamps; the vaginal portion of the cervical stump is coned out with spud or scissors, care being taken to excise the cervical mucous membrane down to the external os and cauterize the canal. This cures the persistent endocervicitis which so often proves intractable after hysterectomy.

When the uterine and ovarian arteries have been tied, the round and broad ligaments are sewn into the cervical stump, raising it high in the pelvis, and the uterovesical fold of peritoneum is brought over the line of suture and sewn to the peritoneum of the uterosacral ligament at the point of insertion into the cervical stump.

The conserved ovary or ovaries are lifted up and sutured to the posterior surface of the round ligament, about an inch and a half from the internal abdominal ring, and so placed between the round and broad ligaments as they converge toward the cervical stump that the raw surfaces of and ligatures on the ovary are turned into the pouch thus formed. This places the ovary in such a position that adhesions are not likely to occur.

The slight torsion incident to placing the ovary in this position is sufficient to temporarily engorge the ovarian structure, but this interference with the blood supply has not seemed to leave any permanent change in the ovary, provided the gland or the part of the gland retained contained healthy ovarian tissue, unless the suture of the resected ovary has been defective. Of 43 patients in which total extirpation of the uterus and adnexa was done, all are free from pelvic pain or symptoms referable to the pelvis, except lumbosacral backache, which was present in eleven, and which has been completely relieved by proper corseting. The bimanual pelvic exploration demonstrates the cervical stump to be high in the pelvis and freely movable, and the broad ligaments and pelvic peritoneum free from exudate. In none was there any eversion of the vagina. Three suffer from flushes, one from marked nervous phenomena, while thirty-nine, or over ninety per cent, enjoy perfect health.

Of the thirty-two women in whom an ovary, both ovaries, or a part of an ovary were conserved, five complain of pelvic pain referable to the site of the retained ovary. This ovary on examination was found to be enlarged, tender, and somewhat fixed by adhesive inflammation. Three of these women suffer from nervous phenomena, which have apparently increased as the local condition of the ovary has shown further pathologic changes. The four women, one in the complete and three in the incomplete class, in whom the nervous symptoms are so prominent are all over fifty years of age. The last three women could not be in a worse condition had a total ablation been done. The ovary at the time of oper-

ation was considered healthy upon macroscopic examination.

The last of these series are 31 women who were subjected to the radical operation for the results of pelvic inflammatory disease, owing to changes which had taken place in the adnexa. In only one was it possible to conserve an ovary. One death occurred. Twenty-eight of the remainder are at this time in perfect health, complaining of no nervous symptoms of any kind, time, heat, and boroglyceride having dispelled the pelvic exudates which followed operation at the drainage site, etc. One suffers from flushes which recur at varying intervals and seem dependent upon the condition of her general health. All were under forty at the time of operation. The only patient in whom the ovary was retained has occasional pain at the site of the retained ovary, but has no nervous distress.

The severity of the nervous symptoms is less subsequent to the operation, and the general health of the woman better, when a hysterectomy has been performed for pus conditions in the pelvis, than when the uterus has been removed for a fibromyoma. It is further noted that when the ovary has been retained and is pathologic or involved in an exudative mass, the woman is prone to show exaggerated menstrual molimena, often more severe than characterized the nervous symptoms at the menstrual epoch prior to operation. Two patients now under observation have violent gastrointestinal attacks, associated with severe headache at the time that the menstruation should occur. The presence of the ovary in these two patients has seemed to irritate rather than alleviate the nervous reflexes.

A study of the blood picture prior to operation, while limited to a few cases, has seemed to show definitely that when the patient has been the subject of profuse or constant hemorrhages, reducing hemoglobin percentage and red cell count to below 50 and 2,500,000 respectively, even though the ovaries were both removed, the patient has seemed to be free from nervous phenomena, save for a few flushes in the early part of her convalescence. The blood-pressure before and after operation in many of those cases pointed to the fact that the nervous phenomena were worse when the blood-pressure was high prior to operation. In cases which have manifested the most severe symptoms, the blood-pressure before the operation varied from 150 to 240 millimeters, evidencing a toxicity or an arterial sclerosis. Operation made no change in the blood tension of these vessels, and the surgical menopause was stormy until the arterial tension was reduced, when the flushes and other nervous symptoms began to disappear.

From this study Polak concludes that the technique of the operation and the general health of the patient have much to do with the end results.

That a conserved ovary if unhealthy will leave the patient in a worse state mentally, nervously, and physically than if a total extirpation had been made.

That when the woman is at the age at which the menopause should occur, or when she is past the menopause, a total ablation gives the best results.

That the nervous phenomena are more marked when the patient is operated on when she is in comparatively good health, with a high preoperative blood-pressure, than when the blood picture shows anemia or toxemia.

That the symptoms of the operative menopause are less after extirpation for pelvic inflammation than when the ablation is done for fibromyomata; this is probably due to the associated vessel changes which we find in fibrosis.

And, finally, that when one or both healthy ovaries can be conserved it should be done; the younger the patient the more necessary is conservation.

SALPINGOSTOMY AND PREGNANCY.

GELLHORN (*Surgery, Gynecology and Obstetrics,* July, 1911) notes that for years in interval operations for chronic appendicitis he has restored occluded tubes in which there was no sign of suppuration. He has had opportunity to verify the late

effects of salpingostomy in three cases. In one the tube was found patulous more than a year after the salpingostomy. In the second case the tube decreased in size and remained clinically quite normal for almost four years until a secondary illness occurred. In the third the tube was found occluded. The operation consists in either the resection of a portion of the peripheral tube or better still in an incision through the occluded fimbriated extremity together with fixation of the everted flaps to the serosa of the tubes by means of a few fine catgut or linen sutures.

In conclusion the author states that salpingostomy is indicated: (*a*) where children are desired; (*b*) if the occluded tube contains no infectious matter; (*c*) if the tubal mucosa seems intact or still capable of reparation.

That while its field is rather limited, salpingostomy has been followed by pregnancy in a few cases.

That with proper selection of cases and perhaps by appropriate after-treatment the end results might become more promising.

That salpingostomy *per se* adds no danger to the patient.

TWO HUNDRED CASES OF VARICOCELE TREATED BY THE SUPRASCROTAL OPERATION, WITH LIGATURE OF THE SPERMATIC ARTERY.

POTTER (*International Journal of Surgery*, vol. 24, No. 6, 1911) believes that ligature of the spermatic artery is most important in the operation for varicocele. He hopes some day to find some one who will be willing to submit to a ligation of the artery without removal of the veins. He would expect a gradual atrophy and absorption of the spermatic veins, which would finally result in as complete a recovery as though the veins had been removed at the time of operation.

The operation he practiced is as follows: The incision begins at the external abdominal ring and proceeds downward for about one and one-half inches directly over the course of the cord, ending just above the scrotal tissue. The tissues are divided down to the cord; then the cord, the vas, artery, nerves, and pampiniform plexus are drawn through the incision, the vas and nerve separated, the veins, artery and connective tissue ligated above and below, and the intervening portion removed. The ligatures are left long. A ligature is now passed through the stumps and tied, which completely approximates the two cut ends. The remaining long ends of the ligatures are then tied, which brings the points of contact in perfect end-to-end apposition and acts as a natural suspensory for the previously dragging testis. The cord is then returned and the external wound closed.

This operation the writer has thus performed on two hundred and fourteen cases. The reports of sixty-seven he considers complete, and gives the histories of six cases which illustrate comparatively those of all the others operated on.

The histories presented show in general the course taken by all cases following operation. There are very few postoperative symptoms; pain following the operation is practically never present, and recovery within two weeks is positive with no return of the varicocele.

When should operation be performed? In the opinion of the author, whenever a varicocele is present.

In days past, it has been the practice among physicians to prescribe astringent washes and a suspensory for such cases, and to give internal medication for the symptoms produced by the presence of the varicocele.

In this surgical era, advice of this character must be condemned. Surgical interference is demanded in all cases of varicocele for the following conditions: First, where mechanical irritation is produced, or in those patients who are desirous of trying civil service examinations. Second, in patients in whom there is inability to complete a normal sexual act, whether owing to insufficient erection or early ejaculation; those who are restless, tired, suffer from insomnia, and are unable to concentrate their thoughts; those who complain of

physical weakness, impairment or increase of sexual desire or sexual irritability, nocturnal emissions, hypochrondriasis, melancholia or other evidences of mental disorder; those who masturbate or are despondent and suffer from any of the phobias.

ESSENTIAL HEMATURIA.

SCHENCK (*Surgery, Gynecology and Obstetrics*, July, 1911) calls attention to the fact that owing to the increased care in examining patients incident to the use of the *x*-ray and perfected instruments, the number of cases of essential or so-called essential hematuria has rapidly disappeared. There remain, however, certain cases in which there has been copious renal hemorrhage. The kidney has been cut down upon and in some cases excised, and no cause for the condition has been discovered. A number of theories have been advanced to explain bleeding from healthy kidneys. Senator suggests that it is the result of a local hemophilia, which thus accounts in some of the instances for congenital, hereditary, and familial hematuria which have been reported.

Klemperer holds to the theory that there is a paralysis of the vasoconstrictors of the kidney, causing a dilatation of the blood-vessels and a resulting diapedesis of red blood-corpuscles. He compares the kidney condition to an angioneurotic edema of the skin. The three commonest causes of hematuria as clinically seen are calculus, tuberculosis, and new growth. An extremely minute tuberculous focus may cause continued bleeding. Such a focus may be readily overlooked in an operation or even in a hurried examination of the kidney. Albarran notes that in certain conditions of the kidney the least lesion of nephritis is capable of determining the vascular or angioneurotic modification capable of leading to bleeding. Inflammation is a fairly frequent cause of hematuria. Nephritis may be circumscribed or diffuse, unilateral or bilateral. Schenck notes that it is especially the group of cases in which the inflammatory changes are circumscribed and probably unilateral which have been described as idiopathic. Kretschmer has collected 129 cases of so-called essential hematuria. Of these 61 were subjected to a microscopic examination, and of these 61 cases 52 showed some form of nephritis. Other lesions not readily detected have been described as the cause of the hemorrhage. Fenwick and Cabot report cases showing a varix of a papilla; thickening and circulatory disturbances of the capsule were noted by Rovsing and Schwyzer; a concretion on the tip of a papilla is described by Abbe; motility of the kidney, with torsion on the pedicle, producing congestion, was the cause assigned in three cases.

Schenck notes that there are eight cases in which the kidney was removed, examined, and nothing found. In none were serial sections of the whole kidney cut and examined, and in none was it absolutely certain that the bleeding did not come from some lesion of the ureter. He states that until some competent observer reports a case in which there is no doubt that the hemorrhage was from the kidney, and that the kidney was normal in every part as demonstrated by serial sections, we are justified in believing that idiopathic or essential hematuria does not exist.

To the surgeon the interesting features of a study such as this are not the presence or absence of a microscopic or undemonstrable lesion, but the proofs that there are cases of renal pain and hematuria which on exploration show no cause for this condition. It is moreover clear that these cases cannot always be distinguished from those essentially surgical—*i.e.*, the neoplastic and the tuberculous—excepting by exploration. In the great majority of cases calculus can be diagnosed by the *x*-ray; tuberculosis by laboratory examination. Neoplasm in its early and operative stage—*i.e.*, before the palpable or demonstrable tumor has formed—cannot be recognized as such. Hence in those cases of persistent bleeding the surgeon will be forced to operate and should do so with the full knowledge that he may fail to find the cause. From the surgeon's standpoint the one reassuring feature of

this study of hematuria is that even though no cause has been found the cure of the condition has usually been accomplished by a nephrotomy.

ACUTE INFLAMMATION OF LONG BONES, WITH SPECIAL REFERENCE TO EXCISION OF THE DIAPHYSIS.

LE CONTE (*Boston Medical and Surgical Journal*, vol. clxiv, No. 22) in an excellent article based on an experience of sixty cases points out that the tibia is the bone involved in nearly three-fourths of all cases. This affection is essentially one of the male, and in 83 per cent of cases occurs between the fifth and thirtieth years. He notes that in the inflammatory process of bone he finds one or two pathological conditions taking place after the acute symptoms subside:

1. An inflammatory process analogous to the formation of an abscess in the soft tissues, with an attempt by nature to isolate and cast off the dead tissue in the form of sequestra.

2. A diffuse inflammation of the bone analogous to a cellulitis in the soft tissues, in which the greater part or the whole shaft of the bone is involved.

As the result of prompt and radical surgical intervention and a normal resistance of the individual to infection, localization of the inflammation may take place. If the process appears quiescent, it should not be disturbed for one or two months until the sequestrum may be felt free within the cavity. The cavity should be freely opened then, the sequestrum removed, together with the granulations lining the wall, and the cavity swabbed with pure carbolic acid and allowed to fill with granulations. If, however, the inflammatory process does not limit itself, involving more and more of the bone, a radical removal of the diseased tissue is indicated. Le Conte states in regard to his practice in extensive subperiosteal resection or complete excision of the shaft that after having made the incision and disinfected the periosteum he packs the whole cavity with gauze, not a suture being used. The author believes that the sooner the infected material is removed the quicker will be the healing, which in this instance means the reproduction of the bone, and the less will be the task imposed upon the periosteum. Our aim, therefore, should be to get an aseptic periosteum at the earliest possible moment, no matter how little nor how much suppurating bone is removed at the primary operation. He believes that there is no period too early in the disease for the periosteum to regenerate the defect in the bone removed. There is, however, a time when it is too late for the periosteum to reproduce its shaft. It would seem that its energy in reproduction is exhausted either in its effort at combating the disease, or its accomplishment of an involucrum so firmly adherent to the sequestrum that involucrum and shaft must be removed together. The limit of time when the periosteum has ceased to reproduce seems variable, but in the absence of an involucrum its power of regeneration seems to decrease progressively after six months, and where an involucrum is present and must be removed with the shaft of the bone, the power of reproduction was totally wanting in Le Conte's cases.

In reviewing these sixty cases as a whole Le Conte draws the following conclusions:

1. The mortality and extent of the necrosis following acute inflammation of the bone depends not only upon the promptness of surgical interference, but also upon its thoroughness.

2. Suppuration beneath the periosteum does not exclude an infection of the medulla, the presumption being that after three days the medullary cavity is also involved.

3. Within seventy-two hours of the onset of the disease osteoperiostitis is localized usually in the cortex of the bone, and incision, disinfection and drainage are sufficient to bring about a cure. If there is no marked diminution of the symptoms in twenty-four hours after incision and drainage, the medullary cavity should be opened.

4. When the medullary cavity is opened and found healthy, the dangers of infecting it are slight.

5. In the majority of cases osteomyelitis is due to a neglected osteoperiostitis.

6. In operations after the third day, where systemic symptoms are pronounced, the medullary cavity should be always opened, and the opening should be sufficiently long to expose healthy marrow, and sufficiently broad and long to expose healthy bone.

7. The mortality of 10 per cent was directly due to delay in operation and conservatism at the primary operation. In five of these cases, had a radical operation been performed recovery probably would have been the result. In the sixth case the delay in operation was perhaps more responsible than the method for the fatal termination.

In collecting the series of cases reported in this paper, perhaps 40 more were rejected for various reasons, none of whom died, so a mortality of 6 per cent is nearer the truth.

Le Conte's plea is for an early diagnosis and for the treatment of acute inflammation of bone on lines similar to those adopted in infection of the soft parts.

THE INFLUENCE OF FIBROLYSIN UPON SCAR TISSUE.

SIDORENKO (*Deutsche Zeitschrift für Chirurgie,* Bd. 110, Heften 1-3) reports upon the use of fibrolysin both experimentally in animals and clinically in various forms of scar tissue. In the animal experiments a piece of tissue was removed from the animal, and after healing had taken place with consequent scar formation, 20 injections of fibrolysin were made into the scar. The blood cells were counted, the hemoglobin estimated, and the specific gravity of the blood obtained both before and after injection. The influence of the fibrolysin upon the lymph secretion was also observed. The ductus thoracicus was opened in the dog, a cannula inserted, and the outflow of lymph observed for every minute during four to ten hours. Control animals were used in all cases. The results showed that the fibrolysin had no influence whatever upon the scar tissue. The number of white blood cells was not affected by the injections; neither was the differential count. When the rate of lymph flow in the control and experimental animals is observed no difference is to be noted.

Fibrolysin injections were made in human beings in 18 cases, including one of keloid of the neck, 3 of benign esophageal stenosis, 3 of Dupuytren's contracture, 3 of adhesions following appendectomy, 1 of contraction of the eyelids following burns, 2 of contraction of the shoulder and elbow following burns, 2 of stricture of the ureter, 1 of scar in the carotid triangle causing pressure upon the lingual nerve, 1 of ankylosis of the knee-joint after a perforating wound. In all cases Merck's fibrolysin was used in the usual package, with one exception, in which there was injected thiosinamin 2.0, glycerin 4.0, and distilled water 14.0. The injection was made either into the scar or into the muscle near-by. The number of injections varied from 15 to 70. The injections were almost painless, and edema and hyperemia were in no case observed. The therapeutic dose is harmless.

A thorough review of the literature was made, and it is concluded both from such study and from the experiences of the writer that fibrolysin is of no therapeutic value so far as its effect upon scar tissue is concerned.

THE INDICATIONS FOR THE SURGICAL TREATMENT OF GASTRIC ULCER.

KÜTTNER (*Berliner Klinische Wochenschrift,* Jahrg. 48, Nr. 21) says that, while the majority of therapeutists favor conservative treatment of gastric ulcer, there are some clinicians, especially the surgeons, who would give to operative treatment an ever-widening field. The justification and indication for surgical treatment depend chiefly upon three facts: (1) The results of internal treatment. (2) The dangers which threaten the sufferer. (3) The benefit the surgeon can render to the patient and the danger to which the operation exposes him.

As regards the results of internal treatment, according to von Leube's statistics, out of 424 cases treated in hospitals 314

were cured after a period of four or five weeks' treatment, 93 were improved, 10 died, and 7 remained uncured. Ewald's statistics are almost identical with these. Other reports are much less favorable. Warren, who investigated the after-results in 125 out of 187 cases treated, found that only 45 had been cured; in 54 there had been recurrence; 6 died of perforation and 5 of ulcer-carcinoma. Schulz studied the after-results in 157 out of 291 cases, and found that in 120 the results were good and in 37 unfavorable. It is certain that the number of cures reported is in many cases too high. As we have no absolutely certain means of knowing just when a cure has been accomplished in gastric ulcer, we likewise have no definite means of diagnosis. Therefore, when a case is pronounced cured, doubt still remains in many cases whether or not ulcer had really existed. However this may be, the mortality of 10 per cent or upward shows that in many cases internal treatment is of no avail. For such cases surgical treatment is intended.

The danger of the operative procedure is not to be compared to such dangers as uncontrollable hemorrhage, perforation, peritonitis, subphrenic abscess, or carcinoma, which are apt to arise if operation is delayed. Krönlein reports that in the cases operated upon by him for ulcer or its complications 61 per cent were cured and 24 per cent improved. Mayo Robson reports 97 per cent of cures. These results cannot be considered as normal. In many cases the report is made too soon after the operation to enable the surgeon to say whether the results will be permanent or not. The operative dangers and the number of complete cures can be properly appreciated only when the fact is taken into consideration that, as a rule, cases come to operation only after medical treatment has failed. The treatment of ulcer in its early stages belongs to the domain of internal medicine. But the surgeon desires of the internist that he shall not continue his treatment by fasting so long that the patient becomes so far reduced in strength as to render him a poor surgical risk. If there is a recurrence after a course of internal treatment, recourse may be had either to a repetition of the medical treatment or to operation. The author would resort to operation in such cases only under exceptional circumstances; in most instances he would advise a second or a third attempt at medical treatment. This is more justified in those cases in which there has been a long interval between the two attacks.

As to the question of operation, much depends upon the age and state of nutrition of the patient. In those under thirty years of age it is less indicated, because in such patients there is greater tendency to cure and less likelihood of recurrence. Operation is more strongly demanded in those above thirty years of age, because there is less tendency to spontaneous healing and greater tendency to complications. If the condition of nutrition is much lowered or if the patient lacks the desire, the time, or the means to continue the internal treatment, then operation is advised. The social status of the patient exerts considerable influence upon the decision of the question of operation. Sometimes operation is decided upon entirely upon these grounds. In case of excessive hyperacidity, betokening a chronic hypersecretion, or when there is a rapidly developing loss of motility, thus rendering healing difficult, operation is more strongly indicated than when the gastric functions are normal.

A further indication for operation is hemorrhage. Much depends upon whether this is in the form of repeated small bleedings or a large hemorrhage. In case of slight repeated bleeding in young persons, operation is seldom necessary. Such hemorrhages usually extend only over such a period as is required for healing. Frequently such hemorrhages are entirely without symptoms, but usually there is dizziness, weakness, a feeling of fulness, nausea, and vomiting of blood. In most cases after a few attacks bleeding ceases under medical treatment. These cases offer no indication for operation. This is to be considered only when the bleeding continues to recur at weekly or monthly or even yearly intervals in spite of internal treatment. However,

operation must not be delayed so long that the patient is in danger of expiring from sheer exhaustion soon after the operation. Very extensive, sudden hemorrhage is not an indication for operation, for the patient usually dies in a few minutes with the signs of internal hemorrhage. According to Debove and Remond about 5 per cent of ulcer cases die of this complication. Operation must be contemplated only when medical measures fail to relieve or when bleeding is repeated several times. Even then operation must not be resorted to without careful consideration, because the patient's strength may be so reduced that he will be unable to withstand operation. Before the operation one should determine whether the bleeding is from an ulcer or a hemorrhagic erosion, where the bleeding point is, whether it can be found by operation, and whether or not only one or several ulcers are present. The author has found that in some cases the bleeding is from vessels which cannot be reached, from a miliary aneurism, or that the blood seeped out from various points in the mucosa. These findings have led him to be very conservative about operating in cases of very profuse hemorrhage. It is advised on various grounds that operation be deferred until after the patient has had an opportunity to recover from the hemorrhage.

Perigastritis which results in either band-like or surface adhesions with surrounding organs, or the development of a distinct tumor, always calls for operation. The same is true of perforation. Perforation is always fatal without operation, but 50 to 60 per cent of cases can be cured by operation, a result which shows how important surgical measures are in such cases.

ILEOCECAL SARCOMA.

Goto (*Archiv für klinische Chirurgie*, Bd. 95, Heft 2) says that the male is more disposed to ileocecal sarcoma than the female, and that it is most common in the fifth decade of life. Pathologically the tumor is usually circumscribed. The seat of the tumor is by preference in the cecum rather than the valves of Bauhini. Intussusception is frequently observed as a complication on account of paralysis of the affected portion of the intestines. Stenosis is also frequently observed. Ulceration or softening of the tumor is seldom seen. The round cell sarcoma is the most frequent form. Symptomatically there are observed rapid loss of weight, rapid growing, palpable, movable tumor, and often stenosis of the bowel. Mucus and blood in the stools are seldom noted. Differential diagnosis from carcinoma, tuberculosis, and simple inflammatory tumor in the ileocecal region is very difficult. The prognosis is much more favorable than in sarcoma of other portions of the intestine. Also lymphosarcoma offers a more favorable prognosis than the other forms. The only treatment consists in radical removal of the tumor. If this cannot be done, the only recourse is palliative treatment.

TREATMENT OF BASEDOW'S DISEASE.

Sudeck (*Münchener medicinische Wochenschrift*, Jahrg. 58, Nr. 16) considers a case of Basedow's disease cured when the exophthalmos disappears and the hyperexcitability of the heart and the nervous system is overcome. Certain cases are improved and able to take up their occupation when their subjective condition is better, and they are conscious of a marked amelioration of their symptoms even though obvious signs of thyroidism are present. The author has treated 34 cases. Of these one died; in 18 the treatment has been completed, with cure in 16 and marked improvement in 2 cases; in 15 treatment is being continued with improvement in every case. With modern methods of treatment cure may be expected in 75 per cent of cases. It is a rule laid down by Kocher that the degree of improvement goes hand in hand with the quantity of the affected gland which is removed at operation. Cases which have been imperfectly cured may be entirely cured by removing still more of the gland. It is most important to remove the part of the gland which is most highly vascularized.

In this way better results are obtained than by schematically removing a certain portion, as one-half of the gland.

The mortality of the operation has diminished under better technique. For example, in the first 59 operations by Kocher up to 1902 the mortality was 4; in the next 108 cases, up to 1906, it was 5; in the next 155 cases, up to 1908, it was 2; and in the last 72 cases only 1. The author had 33 cases without a death, the thirty-fourth case, however, proving fatal. This decreased mortality is also due in part to the fact that nowadays cases come to operation earlier than formerly. The immediate effect of partial strumectomy is to increase all the symptoms of the disease; especially does the pulse beat faster and become more irregular. This condition is much ameliorated on the day following operation. If a patient far advanced in the disease is operated upon, the aggravation in symptoms which accompanies and follows immediately after the operation may be sufficiently severe to cause a fatal result. When the author meets with a grave case he gives it medical treatment for a while, until some improvement occurs, before proceeding to operation. In one case the pulse-rate was about 280 per minute and there was anasarca and transudation. After several weeks' treatment in bed with milk diet, digitalis, strophanthus, and caffeine, the pulse-rate dropped to 110 per minute. In the author's fatal case the pulse was 120-160, and the patient was in a high grade of nervous excitement. After nine days of treatment, because of the desire of the patient that the operation be not further delayed and in view of the fact that there was no cardiac dilatation, and the pulse, though frequent, was strong, the operation was practiced. In order to avoid a second operation the left lobe and the larger part of the right lobe and a supernumerary substernal thyroid the size of a small hen's egg were removed at one sitting. The patient died suddenly the next morning of cardiac insufficiency.

In cases with marked tachycardia, small, unequal, or irregular pulse, high-grade nervous symptoms, cachexia—in brief, in severe cases—the heart must be carefully guarded. This is best accomplished by rest in bed, bromides, digitalis, caffeine, and similar drugs. The author believes that internal treatment is not to be compared to surgical treatment and considers that operation should be done on every case of hyperthyroidism in which the general condition and the ability to work are seriously impaired, and in which medical treatment does not overcome these defects. This rule applies to cases in which the symptoms are not marked and which lack some of the cardinal features of the disease. The less developed the disease the safer the operative attack.

SALVARSAN IN MALIGNANT TUMORS.

CZERNY and COAN (*Münchener medicinische Wochenschrift,* Jahrg. 58, Nr. 17) call attention to the fact that, as shown by the literature, salvarsan has more or less favorable influence upon malaria, psoriasis, lichen ruber, anemia, leukemia, and lupus. This suggested to them its use in inoperable tumors. It was found that sarcoma was the most favorably influenced. One case of recurrent sarcoma of the cheek was completely cured and was later accepted for military service.

In a case of sarcoma of the sternum treated, death occurred three weeks after injection. In three cases of lymphosarcoma there was no benefit except in one case, in which it was slight and temporary. In five cases of carcinoma there was improvement in the general condition. In one case of cancer of the tongue pain which had previously been severe was entirely relieved. The authors conclude that in inoperable malignant tumors with positive Wassermann reaction, especially in sarcoma, treatment with salvarsan is indicated. Operable tumors are by all means to be removed, though it is a question whether or not such tumors, especially sarcoma, with positive Wassermann reaction should be also treated with salvarsan. On account of the stormy reaction following the injection such cases should be treated only in the hospital.

Cachectic and weakened patients should not receive this treatment. The ordinary dose of 0.4 to 0.6 gramme appears too small for use in malignant tumors. The best method of use seems to be injection into the tumor combined with local application; however, intravenous injection may prove best.

THE INJECTION OF MAGNESIUM SULPHATE FOR ACUTE ARTICULAR RHEUMATISM.

JACKSON (*New York Medical Journal,* June 24, 1911) employs for injection a hard glass syringe of 5-Cc. capacity. He uses a 25-per-cent sterilized solution and injects adults extramuscularly with four cubic centimeters. In some cases the injections produced active purgation, in others they apparently had no effect. Excellent results are reported in five cases.

OPERATION FOR THE RELIEF OF TUBERCULOUS PERITONITIS.

JUDD (*New York Medical Journal,* June 24, 1911) advises in cases of tuberculous peritonitis making an incision three or four inches in length through the sheath of the right rectus muscle, evisceration of the patient as far as possible, the intestines being caught in hot moist towels, and thorough washing of them with a solution of 50-per-cent hydrogen peroxide. The abdominal cavity is also thoroughly washed with the same solution, after which it is flushed out with a normal saline solution equally thoroughly, as are also the intestines. These are then replaced within the peritoneal cavity in their proper position, and the abdominal wound is closed with three layers of sutures. The patient is got out of bed in from eight to twelve days.

When hydrogen peroxide is poured upon the peritoneum it produces a frosted appearance somewhat similar to a window-pane on a cold winter's day. After the flushing with normal salt solution, the peritoneum not the seat of tuberculous peritonitis will resume its normal pink color. Where the tuberculous condition exists, the smallest miliary tubercles will stand forth pearly-white upon a pink background.

Chloroform was given in all of the author's twenty-two cases.

THE DIVISION OF THE POSTERIOR SPINAL NERVE ROOTS.

FÖRSTER (*Lancet,* July 8, 1911), after according credit to Abbe as the first to have performed the operation in two cases of neuralgia of the brachial plexus, observes that if resection of the posterior nerve roots is to be performed at all in cases of tabes with lightning pains, it will be necessary to remove all the roots of one extremity at once, since we never know with absolute certainty which roots are particularly influenced by the morbid stimuli, and there is considerable overlapping of the regions supplied by the different roots. He notes a case in which a resection of three roots was not followed by any sensory disturbance, whilst Hildebrand, Enderlen, and Groves were also unsuccessful.

It will be remembered that Förster proposed resection of certain posterior thoracic roots in cases of visceral crisis. He notes that the manner in which patients are wont to describe and localize the pain in gastric crises and the abdominal hyperesthesia accompanying these crises may suggest to the examining physician the presence of certain organic diseases of the stomach, notably gastric ulcer, as well as diseases of the liver, gall-bladder and intestine; that in these diseases also marked hyperesthesia of certain parts of the chest and abdomen occur very frequently, as has been shown by Head.

Förster was led to the view that the gastric and intestinal crises in tabes are caused by the sensory sympathetic fibers of those organs which enter the spinal cord through certain posterior thoracic roots. Supposing this view to be correct, the crises would cease after resection of these roots. He records the operation as having now been performed twenty-five times. In twenty cases it was successful, two cases were not benefited, and three died from the

immediate effects of the operation. Immediately following the operation in twenty successful cases the crisis disappeared, the body weight increased greatly, and the general condition showed a marked improvement. Some of the patients who until then had been absolutely confined to their beds regained their power to work. In thirteen cases no relapses have been reported. In seven the crises ceased for a while, but subsequently recurred, though with less intensity and frequency. By the method which has hitherto been practiced of only cutting the seventh to ninth or seventh to tenth thoracic roots the source of the crises is not always entirely eliminated. Probably the fifth and sixth as well as the eleventh and twelfth thoracic roots are also concerned. It is therefore desirable to remove as many of the nerve roots as possible, although this increases the gravity of the operation.

What is even more important is in every case to determine exactly the situation of the pain, the extent of the hyperesthesia of the skin, and the site of its maximum intensity. These data may possibly afford a guide as to which roots are chiefly irritated. Guleke reports a case temporarily cured by resection of the seventh and ninth thoracic roots. On recurrence the tenth and eleventh roots were cut. Ordinarily the dura is opened and the posterior thoracic roots are resected close to the spinal cord. Guleke, however, does not open the dura, but picks up the roots in their course outside the dura. Here the anterior and posterior roots are enclosed in separate sheaths separable from one another with comparative ease. The posterior roots are then cut. We must, however, bear in mind that gastric crises may possibly arise from irritation of the pneumogastric nerve, and perhaps even from the vomiting center in the medulla.

Förster gives a brief outline of resection of the posterior nerve roots for the relief of spastic paralysis, especially to disease of the pyramidal tract, and briefly explains the theory on which this operation is based. These paths carry two kinds of fibers: first, those bearing the motor impulse, injury to which causes paresis or paralysis; and secondly, the inhibitory fibers which check the sensory stimuli entering perpetually into the gray matter of the spinal cord by the sensory nerve roots. As a result of damage to the latter class of fibers the sensory afflux acts unrestrained upon the muscles, thus causing the spastic symptoms. If in such cases the posterior roots—*i.e.*, the path of afferent sensory impulses—are cut, the excess of sensory impulses is again reduced and the spastic symptoms are diminished or may even disappear completely. Frequently the fibers carrying the motor impulses are still fairly intact; in such cases resection of the posterior roots is followed by a complete disappearance of the spasms, and all those voluntary movements which were so seriously interfered with by the spastic resistance of the muscles are now executed without any difficulty.

We may therefore conclude that the operation can only be successful where voluntary excitability of the muscles is still present to a certain extent. Further, this treatment can only cure those spastic conditions of the muscular system which are actually due to the influx of excessive sensory stimuli into the gray matter of the cord—*i.e.*, only in true reflex spastic contraction of the muscles. On the other hand, resection of the posterior nerve roots cannot be successful in the muscular contractions of athetosis, chorea, mobile spasm; for this latter class of diseases, which have so often been confused with the former, are due to the direct pathological stimulation of motor centers and paths belonging to the cerebrum and mid-brain; they are therefore comparable to the epileptic convulsions which arise from a corresponding irritation of the motor centers of the brain. Resection of the posterior roots cannot eliminate the pathological stimulus of these centers. In all such cases it has therefore proved unsuccessful. The operation has hitherto been performed in 58 published cases, to which must be added four unpublished cases, three of which were operated upon by Küttner and one by Tietze, giving a total of 62 cases.

Of these five died as the result of the operation and 57 survived; 38 of the survivors were cases of congenital spastic paraplegia (Little's disease); almost all of these patients have been benefited by the operation, some of them showing a very marked improvement.

As to the indications for the operation, he insists that only lesions with real reflex spasticity, as the result of the loss of the corticoinhibitory fibers, are suitable, but not the diseases of the type of chorea, athetosis, mobile spasms, and spasmodic torticollis; possibly, however, Parkinson's disease may be suitable. Secondly, there must be a reasonable prospect of innervating fibers of the pyramidal tract still existing, all cases with slight spasms and considerable paralysis being unsuitable. In cases of severe spasms and total voluntary paralysis there may remain a considerable amount of voluntary excitability, only obscured by the spasms and only apparent after their elimination. In such cases the experiment is worth trying. The question whether any voluntary motility remains may be decided by preliminary injection of stovaine, which temporarily removes the spasms—the arm, as a general rule, is less suitable than the leg. Thirdly, the disease must have become practically stationary, whilst progressive diseases like disseminated sclerosis are hardly suitable, very slowly progressing ones, like spastic spinal paralysis, being perhaps more promising.

The second point to which reference should be made is the after-treatment of the patient. Good results can only be obtained with very careful exercise treatment. It is only by such exercises that voluntary motility is brought up to its highest level, and that, above all, standing and walking are gradually rendered possible. Such exercises should be continued for years, during which continuous progress may be observed. The assistance of orthopedic measures cannot be dispensed with; above all, it is necessary to place the limbs in removable plaster splints in such a position as to correct the previous deformity, the legs in abduction, extension, and outward rotation, the knees in extension, the feet in dorsal flexion; the arms in abduction, the forearms in extension, the hands in supination and extension, the fingers in extension, the thumbs in apposition. These positions are required during the whole time immediately following the operation, the limbs being only removed from their plaster cases for the purpose of the exercises, which should be carried out several times a day; later they should still be kept in the splints at night. If besides the real spastic contractions there are also organic contractions due to shriveling of the muscles and tendons, tenotomy or tenoplasty may also have to be performed.

As to the technique of the operation, the use of adrenalin is advocated since bleeding is often of a threatening character. Hey Groves, writing on this same subject, states the theory on which the operation is based is supplied by Warrington's experimental work, proving, as does a clinical observation of Groves, that there occurs in the anterior horn cells and those of Clarke's column definite chromatolysis which affects only a certain number of cells, and even of those affected some recover their normal structure in time. There is, therefore, a definite anatomical proof of the lessening of the motor activity in these segments where the posterior roots have been resected. This apparently implies that there must have been some atrophy and less of muscular power resulting from the operation. Clinically this has not proved to be the case.

Blood-pressure observation has shown that there is no more shock caused by division of the root nerves than by any other stage of the proceeding. When shock occurs it is usually due to free bleeding and the long time taken in arresting it. If a large quantity (2 to 3 ounces) of a 1-in-50,000 solution of adrenalin be freely injected into all the subcutaneous and muscular tissues, as suggested by Braun, the operation becomes almost a bloodless one. Groves states that since he has adopted this plan he has not had to apply a single pair of pressure forceps or ligature a bleeding

point. The operation he holds should be performed in one stage. In the cervical region he advocates a hemilaminectomy, the bifid cervical spine making this quite easy of performance, and this method giving ample room for dealing with the posterior roots of both sides. All the lumbar and sacral roots may be resected by taking away the laminæ of the eleventh and twelfth dorsal and first and second lumbar vertebræ. The difficulty in identifying the various nerves may be overcome by observing that the third sacral root is the last of any size to be given off from the conus medullaris. This need never be cut for the relief of spasm of the leg muscles because it is associated with the buttocks and perineum only. The root above it—viz., the second sacral—is the first to be divided, and then each alternate root is removed. So long as a good half of the afferent roots in the lumbar and sacral regions are divided the object of the operation is fulfilled, irrespectively of the exact nerves cut. Where the main complaint is due to spasm of a single group of muscles, it would be better to divide all the posterior roots concerned with that group rather than to take alternate nerves. Groves summarizes his conclusions, based on an admirable statistical study, as follows:

For the relief of pain the operation of posterior nerve-root resection is a somewhat uncertain proceeding. Cases which present very great pain without any organic disease are often of a highly neurotic temperament, and their pain seems to have an important psychical element which is not relieved by the operation.

For the relief of visceral crises the operation holds out the only prospect of radical cure which we know of at present. Only those cases of this kind are suitable in which all other means of relief have failed, but on the other hand it is important not to wait until the patient has become debilitated by emaciation and morphine.

In cases of spasm associated with lesions of the pyramidal tract the operation has its largest field of usefulness. Spasm is in all these cases definitely relieved, and if the pyramidal tract is not wholly severed a great improvement of motility results.

The operation causes definite chromatolysis of some of the motor cells in the anterior horn of the segments involved, and this is probably associated with the lessening of motor spasm.

By the use of adrenalin injections as a preliminary to the operation the procedure becomes an almost bloodless and speedy one.

There is no special shock associated with the division of the posterior nerve roots.

It is better to perform the whole operation in one stage.

In dealing with the brachial roots it is best to do a hemilaminectomy.

The lumbosacral roots are best approached at their junction with the cord rather than at their point of exit from the dura.

NEUROTROPHIC EFFECT OF SALVARSAN.

Benario (*Berl. klin. Woch.*, No. 26, 1911) in answer to Finger's paper dealing with what the latter considered undoubted evidence of the neurotrophic effect of salvarsan, calls attention to the frequency and the earliness of cerebral symptoms in syphilis, the proteus-like clinical picture of the same, the objective and demonstrable ophthalmoscopic findings, and the treatment and course of syphilitic infection. Oppenheim calls attention to the extraordinary fluctuations in the syphilitic symptomatology, and indeed considers this characteristic of the disease. Nor can this be wondered at when it is remembered that syphilitic infection may involve not only the blood-vessels, but the meninges, the brain substance, and the nerve trunks, commonly all. There is scarcely another affection which is marked by such pronounced fluctuations. Attention is called to the need of early and vigorous treatment in all cases of cerebral syphilis. The optic atrophy described by Finger is due to the syphilitic infection uncombated and not to the therapy.

Benario has no hesitation in stating that

on the basis of a careful study of Finger's case the toxic neurotrophic effect of salvarsan is not proven, but rather the symptoms described are due to the syphilis itself. He further holds that the therapy of nerve recurrence must be energetic.

CIRCULATORY DISTURBANCES OF THE MESENTERIC VESSELS.

COLLINS (*New York Medical Journal*, June 10, 1911) observes that circulatory disturbances of the blood supply of the small intestine that present themselves to the surgeon are usually of such a character as ultimately to produce gangrene of the gut. Among these we have injury to the mesenteric vessels by trauma, constriction of the vessels by volvuli, intussusception, strangulated hernia, etc. The conditions present such a train of symptoms that diagnosis may frequently be made and surgical interference often check the evil before it is too late, and thus the parts be restored to normal, or what amounts to the same thing, a cure effected by resection.

In addition to these types, which we may call obstruction by external causes, there are those of internal causation, such as emboli and thrombosis of the mesenteric vessels. It is usually taught that the mesenteric arteries like those of the brain are terminal in character, and as such have little or no collateral circulation; hence an embolus or thrombosis of the mesenteric arteries will result in death of the intestine coextensive with the part supplied by the particular vessel or branch involved.

It would be a natural inference that a sudden occlusion of the mesenteric artery would result in an anemic gangrene of the part supplied, and that a stoppage of the mesenteric vein would give a congestive or moist gangrene. Actual observation shows, however, that the moist gangrene is the only type observed, provided the artery alone or the vein alone is occluded.

Sprengel in an exhaustive paper on the subject of intestinal gangrene stated that anemic gangrene occurred only when both the artery and vein were blocked. That anemic gangrene does not occur when the artery alone is stopped is easily explained by the fact that the mesenteric veins have no valves, and consequently the affected part is bathed in venous blood by a return engorgement from connecting veins.

The teaching that no anastomotic circulation exists in the mesenteric arteries must be profoundly modified by the experiments of Longcope.

Longcope has shown that extreme narrowing of the lumen of the superior mesenteric artery or celiac axis has for its first effect a congestion and not anemia, the blood coming through the narrowed lumen plus a slight collateral anastomosis with the inferior mesenteric. In time a normal blood supply is established by a collateral arc. With sudden occlusion of the superior mesenteric the collateral arc does not suffice and necrosis develops.

If the analogy between dogs and human beings holds true, there must be cases in which a slow occlusion of the superior mesenteric artery occurs with gradual but more or less complete cessation of blood supply by the normal channel to the small intestine, and yet gangrene may be averted by collateral or anastomotic vessels.

In cases in which the occlusion is sudden, the symptoms, though variable, are so severe as to cause the surgeon much anxiety; they usually lead to operation.

The principal symptoms are sudden pain of a marked degree, abdominal rigidity and tenderness, fever, either constipation or stools mixed with blood. Hiccough is often present, and so is a leucocytosis of high count. Another symptom, on which much stress may be laid, is a doughy sensation in that part of the abdomen overlying the swollen gut; this doughy area moves about as the position of the gut is changed.

Later on the gangrene produces a septic peritonitis with its marked symptoms. The treatment is obvious. The prognosis depends upon the amount of gut to be resected and the condition of the patient.

There is a third type of disturbance of splanchnic circulation to which our attention should be particularly drawn, for but

few of these cases have been reported. This type presents as its pathological lesion single or multiple small hemorrhages in the wall of the gut, usually the ileum, without any thrombosis or embolus of the superior mesenteric artery or vein while lying between the mesenteric layers of peritoneum.

The hemorrhagic spots usually lie between the muscularis and serosa, or in the submucosa, and are placed diametrically opposite the mesentery. The areas vary from one to three centimeters in diameter.

In lieu of a better name the writer has called this condition intestinal apoplexy.

Maragliano (*Berliner klinische Wochenschrift,* March, 1894) describes three cases, all in young men, in which the histories were those of recurring pain and constipation for several weeks before coming to his attention. When he first saw the patients they had septic peritonitis, and operation revealed one or more perforated points of the lower part of the ileum. All the patients died, and autopsy showed not only the perforated ulcers, but other ulcers not yet perforated, and in addition several areas of hemorrhage like those just described. Maragliano believed the three types of lesions to be but progressive steps starting in the hemorrhagic areas, and considered the condition to be an acute infectious disease. He obtained by culture from parts of the affected ileum a microorganism that produced in animals a congestive peritonitis, and in one instance hemorrhages in the wall of the ileum.

Sprengel also describes one case which gave the signs of intestinal obstruction, and which, on operation, showed some bloody serum in the abdominal cavity and numerous intramural hemorrhages scattered throughout the small intestine. The patient died practically on the table, and the autopsy showed thrombotic superior mesenteric veins, with arteries intact. The thrombosis puts this case out of the class described, although the gross appearance of the small intestine resembles the intestinal apoplexies.

The writer has seen three cases illustrating this condition. In two of them the lesion was mild (only a single spot of hemorrhage), while the third had multiple areas. All the patients were subjected to operation, and fortunately all recovered.

In reviewing his cases it might properly be argued that the symptoms in two of them were out of proportion to the lesions found, but on the other hand the cessation of symptoms after operation was very remarkable.

It might also be questioned whether patients might have been cured without operation—the hemorrhagic spot resolving without perforation. The reply is that the impression left on the mind of the operator was that perforation surely would have occurred, and resection presented the most trustworthy way to forestall that accident.

PROSTATIC HYPERTROPHY.

Hirt (*Klinisch-therapeutische Wochenschrift,* Jahrg. 18, Nr. 16) says that the treatment of prostatic hypertrophy is either symptomatic and conservative or operative. As regards the conservative treatment, in the early stages, the catheter is not necessary, though the passage of a large sound reduces the irritability. Great care must be exercised in instrumentation because of the bad results which it may excite. Irritant foods, alcohol, chilling or taking cold, and constipation must be avoided. Hot sitz baths, hot applications to the hypogastrium and the perineum, and hot enemas have a favorable influence. Narcotics should not be used. Prostatic massage has but little effect. If there is no cystitis the bath cures are of no value. If there is a large residual urine—that is, more than 75 to 100 cubic centimeters—catheterization is necessary. The best catheter is the Mercier silk catheter number 12 to 15. The bladder may also be washed out with boric acid 3 per cent, silver nitrate 1 to 5000, or potassium permanganate 1 to 10,000. When in spite of all precautions cystitis threatens, urinary antiseptics should be given internally.

If the general condition is good, micturition not very frequent, and there is no

serious bladder trouble, catheterization every eight to fourteen days is sufficient. Sometimes catheterization must be done as high as four to six times daily. The patient should be allowed to catheterize himself only under the most urgent necessity, for self-catheterization usually soon results in cystitis. When this is necessary the patient should be carefully taught by actual demonstration all the steps in the process of aseptic catheterization.

If cystitis supervenes, the bladder must be washed out with boric acid or corrosive sublimate solution. In case of acute retention of urine, catheterization must be done at once. The best catheter is the Mercier, but if this fails to enter the bladder a metal catheter, number 15, may be used. In those rare cases in which the catheter cannot be introduced, the bladder may be punctured with a trocar and a small catheter introduced through the opening and fastened in the bladder.

In many cases there is hematuria of such a degree that the usual catheter gets stopped up by clots; in this event a large metal catheter must be used. If this does not succeed, morphine and ergotin should be given hypodermically, and later on another attempt be made to empty the bladder. If this does not succeed suprapubic section must be done, and if the bleeding is severe the bladder tamponaded. When catheterization is difficult and must be done frequently, continuous catheterization must be recorted to. For this purpose a silk or a rubber catheter may be used. Every three to four days it should be removed and the bladder irrigated.

When conservative measures are no longer successful, operation must be carried out. The simplest and at the same time most uncertain operation is resection of the vasa deferentia. The mortality of this operation is practically nothing, and various operators report 30 to 60 per cent of favorable results. The results of the Bottini operation are so poor that it is now but little used, though it may be tried when a more serious operation cannot be done. The mortality is about 6 per cent. The most valuable operation is prostatectomy. This may be done by the suprapubic or the perineal route—the former when the middle lobe is chiefly involved, and the latter when the lateral lobes are involved. There is a considerable mortality in both operations. The danger has in recent years been lessened by the two-stage operation. If operation is refused and the catheter no longer serves its purpose, a permanent bladder fistula may be established.

PARA-ARTICULAR CORRECTION OF TUBERCULAR ANKYLOSIS OF THE KNEE-JOINT.

ECKSTEIN (*Prager medicinische Wochenschrift,* Jahrg. 36, Nr. 19) states that the para-articular correction of ankylosis of the knee-joint due to tuberculosis has for its object the overcoming of a crippling deformity without danger of causing a recurrence of the tubercular infection. By this method the seat of the disease is not disturbed. It is essential to this operation that the tubercular affection should have been quiescent for at least two years—that is, that at least this much time should have elapsed without pain, abscess, fistula, or fever. The condition of the joint cleft and the bone ends must be determined by the *x*-rays. The object to be accomplished by the operation is to so nearly straighten the limb that the sole of the foot may be brought into contact with the ground with or without shortening of the limb, and to enable the patient to dispense with all sorts of mechanical support. The procedure if carried out aseptically is entirely without danger, because it involves only the healthy tissues and healing quickly occurs. The operation, which is carried out with the aid of the Esmarch bandage, begins with a subcutaneous tenotomy of the tendons at the back of the knee. Then a supracondylar osteotomy is done, being careful to keep above the epiphyseal line in children. If the joint has been bent to an angle of near 90 degrees osteotomy of the tibia must also be done. This second osteotomy should be done several weeks after the first.

CORRESPONDENCE.

LONDON LETTER.

BY J. CHARLTON BRISCOE, M.D.

The break in the heat wave and the onset of wet weather have combined to relieve considerable anxiety all over the country. In practically all the rural districts the prolonged drought has had a most disastrous effect upon cattle, for green foodstuffs are almost non-existent, and in some places farmers have been obliged to actually kill their stock rather than see them slowly starve. Some of the provincial towns have also suffered from lack of water, especially in places where a great deal of water is used in manufacturing processes. Bradford, which is the center of the woolcombing industry, had its supply cut down to a few hours daily, and as a result some of the mills had to close down. Only in London did the prolonged drought appear to cause no anxiety, and according to a statement of the Metropolitan Water Board no special measures would be necessary unless the drought continued right up to Christmas. The Board has under its control storage reservoirs of a capacity of about 8,000,000,000 gallons. Other reservoirs are in course of construction, and by next spring the capacity will be increased by 4,000,000,000 gallons. Storage is found to have a very beneficial effect in improving the purity of the water, as after storage bacilli are found to die very rapidly. The reservoirs thus serve the double purpose of meeting emergency conditions and improving the purity of the water.

The heat wave has levied a heavy toll on the infant life of the metropolis. In one week in August the number of deaths was more than 500 above the average for corresponding periods in other years, and a large proportion of these deaths were due to summer cholera in children under two years of age. In certain cities like Liverpool the death-rate has been raised by the unsanitary conditions which resulted from the strike of scavengers, but fortunately these men have now returned to work, and Liverpool is slowly recovering from the confusion caused by the excesses of the strikers. The epidemic of strikes in the labor world has had an amusing aftermath in the unrest displayed among the schoolboys of the country. In some places whole schools "downed books," paraded the streets, posted pickets, and endeavored to intimidate loyal scholars to join their ranks. The chief demands were for longer holidays and the abolition of the cane. Unfortunately for the strikers the demonstrations only had the effect of bringing the cane into greater prominence than ever before, and even the most valiant of the leaders had to submit to the indignity of being led by the hand back to school by indignant mothers.

The recent increase in infant mortality lends particular interest to the report just issued by Dr. Coutts as the result of an inquiry into the value of condensed milks, with special reference to their use as infants' foods. The investigation has shown that condensed milks are used on a considerable scale for feeding infants, and that this use is increasing. Infants are thus deprived of the fat which is essential for growth and health, while in the sweetened milks there is an excess of sugar in relation to other food elements. Full-cream unsweetened condensed milk appears to be the most suitable substitute, when required, for fresh cows' milk. Experimental investigations showed that certain microörganisms may survive the condensing process. The evidence pointed to the conclusion, however, that the infecting organisms of such diseases as scarlet fever, diphtheria, and enteric fever are destroyed in condensed milk. Direct experiments carried out on milk artificially infected with tubercle bacilli showed that tubercle bacilli were destroyed by the condensing process. Though condensed milk may be bacteriologically purer than fresh cows' milk, its liability to con-

tamination after the tin is opened makes it a dangerous food for infants during the summer months. The use of condensed skimmed milk also leads to a great excess of rickets. This evidence has led to various suggestions for the administrative control of the sale of condensed milk, especially as to the desirability of labeling all tins of condensed skimmed milk as being unfit for the food of infants.

The British Association has just concluded its annual meeting for the discussion of scientific subjects. Some of the subjects are of such a recondite nature that they present little of interest to the ordinary medical man, and can only be discussed by experts in that particular branch of knowledge. But the discussion on ventilation, introduced by Mr. Leonard Hill, will touch the interest of the most unscientific. The debate showed that in spite of all the textbooks, this perennial subject has not yet been mastered either in theory or practice. Most of us have noticed at times the failure of sundry elaborate and "scientific" systems to produce the sensation of breathing "fresh air," in spite of the authoritative assurance that it is not the "ventilation" which is at fault. Those who have preferred the evidence of their own senses to scientific theory may gain support from Mr. Hill's investigations. He laid stress on three properties of the air which have nothing to do with its chemical purity—namely, temperature, movement, and humidity—and he showed how on physiological grounds these affect the well-being of both body and mind. They exercise a direct influence on the nerves of the skin, and on the mechanism which regulates the temperature of the body. The most oppressive atmosphere is that which is at once hot and moist and still, and the relief afforded by the artificial motion imparted to the air by any of the forms of electric fan is due partly to the cooling by evaporation, but probably also to some direct effect upon the cutaneous nerves. This may account for the failure of openings admitting air to a room and causing a circulation, but not impinging directly upon the skin, to produce the same freshening effect as the ordinary open window. Mr. Hill goes so far as to say that the discomfort and depressing effect of badly ventilated rooms has nothing to do with the chemical purity of the air, but such a sweeping statement will require considerably more proof before it can be accepted as true.

The details of a new scheme of organization for the naval medical service have just been published. It includes the establishment of a new scientific school at Greenwich, which will be in touch with the principal civil medical schools and with the army medical school at Millbank. The existing physical and chemical laboratories at Greenwich will be utilized, supplemented by others required by the various forms of medical research. The school will be also utilized for a six months' course, through which every surgeon will have to pass before he becomes eligible for the rank of staff-surgeon, and a failure to pass as staff-surgeon will entail compulsory retirement on the completion of eight years of service. It is hoped that the scheme will provide young officers with opportunities of keeping themselves abreast with the growing knowledge of the day, for the work of study and observation which devolves upon them in many countries requires them to be conversant with many branches of physics and natural history. Slight differences are also to be made in the rates of pay, and though the alterations are not on a very generous scale, they are in favor of the officer, as they chiefly depend upon more frequent increments of pay in each successive step of rank. It is satisfactory to see that the authorities realize that the conditions of the service shall be satisfactory and shall afford proper remuneration and recognition, so that young medical men of the highest ability may be induced to join what may be regarded as one of the most valuable of the public services.

The recent innovation of payment for members of parliament has led to some amusing correspondence. Several of the recipients have intimated that they do not intend accepting a salary. Appeals have

been made to such members by individuals and others, among them Sir R. Ross, who wants the money for research in tropical medicine. We miss the usual appeal from the chairman of the London Hospital. Perhaps he is away on holiday.

PARIS LETTER.

BY M. A. C. TUCKER, M.D., PARIS.

The heat wave in which Paris and the whole of France have latterly been immersed is the latest kind of record broken during this season. If we are to believe the meteorological experts, such a torrid summer has not been experienced since 1754, but even that is now being left "in the shade." According to the distinguished member of the Paris Academy of Sciences, M. Deslandes, director of the Mendon Astronomical Observatory, the torrid temperature that reigns over occidental Europe is by no means attributable to a greater activity of the sun. If the sun's rays are so ardent it is because they travel through an exceptionally pure and transparent atmosphere. The persistence of high barometrical pressure has, in his opinion, evidently created or established a state of equilibrium in different layers of our terrestrial atmosphere.

Unfortunately, if Phœbus sends us his ordinary heat and his usual number of calories, he is none the less responsible for the very serious increase of the modern Babylon's death-rate, which from a weekly average of eight hundred deaths has of late risen to thirteen, fourteen, and even fifteen hundred.

After the fearful inundations of last year, the French capital has been afflicted with a water famine, a most serious one in kitchens and sculleries as well as for toilet purposes, for a great many people had to be content with soda water and seltzer siphons for their daily ablutions. The main sewers threatening infection through want of sufficient flow, it was found advisable in responsible quarters to resort to chemical disinfecting processes, and the immediate result was the poisoning of the Seine fishes, whose dead bodies could be seen floating in the river by myriads.

At last the Prefect of the Seine Department, aided by some savants, came to the rescue, contriving to borrow a water-supply from the river Marne duly filtered and sterilized, which put an end to the fears of cholera, pest, and other ugly epidemics.

At the sitting of the Medical Journalists' Congress an interesting paper relating to legal repression of the usurpations of "the medical doctor's title and functions" was read, from which it is made clear that if the delinquent who has applied his quack remedies has done so in simply designating himself a "Médecin," a "Docteur," or "Médecin Spécialiste," he is not liable for "usurpation," as the only lawful title is "Docteur en Médecine," and that is rather cut to a nicety, for medical doctors are never addressed or designated by their full titles. The penalty for usurpation combined with practice is a fine ranging from two to three thousand francs, with imprisonment from six to twelve months added. This may be applied to a genuine but foreign doctor who would wilfully neglect to divulge the fact in prescribing (including the dentist-surgeon).

To make it very clear, if a man has on his doorplate the professional inscription "Dr. X., Médecin Américain," he comes under the law, but if he simply designates himself "Dr. X. (de Philadelphie)," he cannot be prosecuted.

The Supreme Court of Leipsic, Germany, has just condemned a surgeon who rightly operated on a young lady, fully assenting to the treatment, but her guardian demurred and sued the surgeon for damages, which he finally obtained in the high court. In France a surgeon is fully qualified to undertake under personal responsibility any operation which may be thought urgent, and the direct consent of the patient old enough to understand its meaning is quite sufficient.

The Secretary of State for Justice has lately been questioned to the following effect: What is the competent authority which is *bound* to legalize the signature of

a medical doctor upon a medical certificate? The reply is: It must be well understood that there is a distinction between "legalization" which gives legal strength to the document upon which it is affixed and "certification," which has only for its object testimony of the sincerity of such signature. The legalizing agents are the presidents of tribunals, the mayors, and the police commissioners of the district, but the mayor and the police authorities have a right to refuse to legalize a private document relating only to private interests, as police and municipal officials are not qualified to legalize a signature otherwise than for its production in a court of justice.

In this country midwives encroach as much as they can upon the medical grounds. One of their number has learned to her detriment that trespass is an offense punishable by law. The case was heard in the court of the town of Beauvais, the doctors of the locality having in a body complained of the lady's unfair competition. After the hearing of the evidence, the court, taking into consideration the number of prescriptions delivered by the defendant, and estimating the damage sustained by each doctor in the action at the rate of one hundred francs, ordered Mrs. B. to pay accordingly, with costs. Moreover, the doorplate upon which is engraved "Maladies des dames" was ordered removed within fourteen days, under a penalty of ten francs per day after expiration of the time.

THE IODINE METHOD OF SKIN STERILIZATION.

To the Editor of the THERAPEUTIC GAZETTE.

SIR: Most of the articles now published in medical journals descriptive of the technique of the iodine method of skin sterilization ascribe priority to Grossich. As an American citizen, I wish to say that iodine was used in this country by myself and some of my friends as early as 1905 and the results published in the *Journal of the American Medical Association* of April 14, 1906. Later on I wrote a paper for the Hot Springs meeting of the Mississippi Valley Medical Association which was held in November, 1906, and this paper was published in the THERAPEUTIC GAZETTE of May 15, 1907, while the article published by Grossich in the *Centralblatt für Chirurgie* did not appear until October, 1908.

I might add further that I saw the tincture of iodine in routine use in the clinic of Doderlein of Munich in the fall of 1907.

Very truly yours,

August 30, 1911. J. E. CANNADAY.

NOTES AND QUERIES.

ORGANIZED MEDICINE: ITS INFLUENCE AND ITS OBLIGATIONS.

In his Presidential address before the American Medical Association in Los Angeles, Dr. Murphy said he could not refrain from sounding a note of warning in connection with medical education, lest we become faddists. In the medical college of thirty years ago a large percentage of the professors were "chosen for chairs" in the college faculty because they had attained some local or national reputation as practitioners; were friends or associates of one who had the organization of the new school in hand; or possessed the all-essential requirement—a sufficient amount of money to invest in the stock or partnership. These selections were often made regardless of the professors' special knowledge of the subjects they were to teach or their ability to impart it if they possessed it. The students were forced as a requirement for graduation to sit for hours each day within the hearing of men ill informed and incapable of teaching. There were, however, many very able teachers in the colleges, though selected in this haphazard way. This condition did not exist alone in the third-class schools, but in the first and second (modern classification). To be relieved of this we all looked forward

to the time when the university would take charge of medical education; when the professor or teaching head of a department would be selected because he was particularly well-informed on his subject, and could better instruct the student. The university control is here, but with what result to the student? The departmental head is now a man of world-wide reputation as an original investigator, a discoverer, laboratory expert, etc.; but as a teacher, one capable of imparting information to a student or a class in an acceptable and attractive manner, he would not, in a considerable percentage of cases, receive a grading of C in a third-class medical school (Flexner's estimate), notwithstanding his abundant information on the subject. Original investigators ride their hobbies in the class-room to the exclusion of much-needed information in their branches which the student needs more than he does the individual's special trend of thought now given him.

The president and the faculty of a university should elect as teaching heads of departments men capable of imparting information with force and in such a way as to be grasped, appreciated, and retained by the student body.

There is a place and a first one for the special investigator, the discoverer, the laboratory and the original research man, but it is not in the delivery of the products of medical attainment to the student (unless he possesses special qualifications as a teacher) that the best results in medical education can obtain. The laboratory idea has dominated education for the past decade. Much of the instruction has been given from a purely scientific standpoint; the department has been controlled by purely scientific men who had little or no knowledge of medical practice—often not even medical graduates—and they fail in establishing a relationship between the scientific facts and disease. The mission of the university medical department is not primarily the training of original investigators, but of educating physicians for the practice of medicine—*i.e.*, training men who can apply the scientific knowledge to the patient, who is the hub of medical education. In the first one-half or three-fifths of the medical course of the modern university, the student is not brought in contact with the patient at all, and when he enters the junior or senior class, though overflowing with isolated scientific facts, he is wofully incapable of applying his scientific knowledge to the patient. The clinical phase has been in a minor rôle dominated by the laboratory idea. If pure science is to be the all-absorbing topic of medical education for the first two years, then a fifth year must be added to the curriculum, which should be, preferably, an internship in a good hospital. Laboratory research, experimentation, chemistry, and bacteriology must all aid in the prevention of disease, and assist in the interpretation of symptoms, physical signs, clinical history into their pathologic entities and their etiologic factors—the only basis for rational therapeutics and the highest attainment in medicine, next to the original discovery of principles.

In order to meet the educational requirements for matriculation in the modern school, the young man is forced to keep his face in the folds of books from his infancy. He has had no opportunity to think, he is a book-stuffed, machine-made, non-thinking automaton, albeit a fit and acceptable applicant, according to present requirements, from which a medical school is supposed to make a thinking medical man.